

SECTION A. DETAILED STATISTICAL TABLES

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TABLE NOTES

CLASSIFICATION OF REPORTING UNITS

The basic reporting unit was the company or enterprise, which includes all establishments under common ownership or control. All research and development (R&D) expenditures and all scientists and engineers of each company were classified into a single standard industrial classification (SIC) code and size category.

COMPANY SIZE-CLASS

Companies are categorized by their total number of domestic employees. The following are the six company size-classes used in this report:

1. Fewer than 500 employees
2. 500 to 999 employees
3. 1,000 to 4,999 employees
4. 5,000 to 9,999 employees
5. 10,000 to 24,999 employees
6. 25,000 or more employees

CURRENT AND CONSTANT DOLLARS

Statistics in all tables are reported in terms of current dollars. Constant dollars are also presented in two summary trend tables, tables A-1 and A-22.

DISCLOSURE AND SUPPRESSION OF STATISTICS

The Bureau of the Census conducts the survey under Title 13 of the United States Code, which prohibits publication or release of data or statistics that may reveal information about individual companies. Therefore, the data in some of the table cells may have been deleted and replaced with "(D)". This occurs when a small number of companies account for a large percentage of the R&D funds or scientists and engineers in a particular data cell. Although publication of certain cells may be withheld, the estimates in the cells are

always included in totals. The tables most often affected by this rule are those that contain data on Federal support to companies for R&D performance.

GEOGRAPHIC STATISTICS

The statistics cover only those operations located in the 50 states and the District of Columbia. Company-sponsored R&D performed outside the United States by foreign subsidiaries of U.S. domestic companies is included in table A-11 but is excluded from all other tables.

IMPUTATION

Missing data are imputed for some data items. Therefore, the statistics in some of the table cells may be accompanied by the notation "(S)" which indicates that the imputation rate—the percentage of the statistic not reported by respondents and consequently estimated—exceeds 50 percent for that item. In such cases the user should be aware that the estimate may be statistically unreliable. See table B-4 in section B for imputation rates for specific items.

INDUSTRY CLASSIFICATION

An enterprise or company level SIC code was assigned to each company. A single SIC code was assigned to multiestablishment companies based on the code that represented the most dominant aggregated activity for that firm in terms of total payroll. Statistics for the following industry groupings are published in this report (SIC codes are shown in parentheses¹):

Food, kindred, and tobacco products (20,21)²
Textiles and apparel (22,23)
Lumber, wood products, and furniture (24,25)
Paper and allied products (26)

¹ When the 1994 sample was drawn, the 1987 revision of the SIC system was in effect.

² Until 1984, the tobacco products industry (SIC 21) was included with "other manufacturing industries."

Chemicals and allied products (28)
Industrial chemicals (281–82,286)
Drugs and medicines (283)
Other chemicals (284–85,287–89)
Petroleum refining and extraction (13,29)
Rubber products (30)
Stone, clay, and glass products (32)
Primary metals (33)
Ferrous metals and products (331–32, 3398–99)
Nonferrous metals and products (333–36)
Fabricated metal products (34)
Machinery (35)
Office, computing, and accounting machines (357)
Other machinery, except electrical
(351–56, 358–59)
Electrical equipment (36)
Radio and TV receiving equipment (365)
Communication equipment (366)
Electronic components (367)
Other electrical equipment (361–64,369)
Transportation equipment (37)
Motor vehicles and motor vehicles
equipment (371)
Other transportation equipment
(373–75,379)
Aircraft and missiles (372,376)³
Professional and scientific instruments (38)
Scientific and mechanical measuring instruments
(381–82)
Optical, surgical, photographic, and other instru-
ments (384–87)

Other manufacturing industries—printing and
publishing (27), leather products (31), and
miscellaneous manufacturing industries (39)
Nonmanufacturing industries—agricultural services,
forestry, fishing and hunting (07–09); mining
(10,12–14); construction (15–17); transportation,
communications, electric, gas, and sanitary
services (40–42,44–49); wholesale and retail
trade (50–59); finance, insurance, and real estate
(60–65); holding and other investment offices
(67); hotels and motels (701); business services
(73); automotive repair, services, and parking and
miscellaneous repair services (75–76); motion
pictures and amusement and recreation services
(78–79); health and legal services (80–81); social
services (83); museums, art galleries, and botani-
cal and zoological gardens (84); engineering,
accounting, research, management, and related
services (87); and miscellaneous services (89).

PERCENTAGES

Percentages were calculated on the basis of thou-
sands of dollars and may differ from those calculated
using the rounded figures shown.

ROUNDING

Because of rounding, detail may not add to totals.

³ Because of the close similarity of their R&D activities, companies primarily engaged in the manufacture of ordnance and accessories, including complete guided missiles, are grouped with companies primarily engaged in the manufacture of aircraft and parts.

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Table A-1. Trends in industrial R&D performance, by source of funds, in current and constant dollars: 1953–94 and preliminary estimates for 1995–96

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Year	Total R&D		Federal		Company 1/	
	Current dollars	Constant 1987 dollars	Current dollars	Constant 1987 dollars	Current dollars	Constant 1987 dollars
	[Dollars in millions]					
1953.....	\$3,630	\$16,500	\$1,430	\$6,500	\$2,200	\$10,000
1954.....	4,070	18,333	1,750	7,883	2,320	10,450
1955.....	4,640	19,414	2,180	9,121	2,460	10,293
1956.....	6,605	27,987	3,328	14,102	3,277	13,886
1957.....	7,731	31,684	4,335	17,766	3,396	13,918
1958.....	8,389	33,691	4,759	19,112	3,630	14,578
1959.....	9,618	37,570	5,635	22,012	3,983	15,559
1960.....	10,509	40,419	6,081	23,388	4,428	17,031
1961.....	10,908	41,475	6,240	23,726	4,668	17,749
1962.....	11,464	42,617	6,434	23,918	5,029	18,695
1963.....	12,630	46,434	7,270	26,728	5,360	19,706
1964.....	13,512	48,780	7,720	27,870	5,792	20,910
1965.....	14,185	49,947	7,740	27,254	6,445	22,694
1966.....	15,548	52,884	8,332	28,340	7,216	24,544
1967.....	16,385	54,076	8,365	27,607	8,020	26,469
1968.....	17,429	54,808	8,560	26,918	8,869	27,890
1969.....	18,308	54,814	8,451	25,302	9,857	29,512
1970.....	18,067	51,327	7,779	22,099	10,288	29,227
1971.....	18,320	49,380	7,666	20,663	10,654	28,717
1972.....	19,552	50,392	8,017	20,662	11,535	29,729
1973.....	21,249	51,450	8,145	19,722	13,104	31,729
1974.....	22,887	50,973	8,220	18,307	14,667	32,666
1975.....	24,187	49,161	8,605	17,490	15,582	31,671
1976.....	26,997	51,620	9,561	18,281	17,436	33,338
1977.....	29,825	53,354	10,485	18,757	19,340	34,597
1978.....	33,304	55,231	11,189	18,556	22,115	36,675
1979.....	38,226	58,271	12,518	19,082	25,708	39,189
1980.....	44,505	62,071	14,029	19,566	30,476	42,505
1981.....	51,810	65,665	16,382	20,763	35,428	44,902
1982.....	58,650	69,988	18,545	22,130	40,105	47,858
1983.....	65,268	74,849	20,680	23,716	44,588	51,133
1984.....	74,800	82,198	23,396	25,710	51,404	56,488
1985.....	84,239	89,236	27,196	28,809	57,043	60,427
1986.....	87,823	90,633	27,891	28,783	59,932	61,849
1987.....	92,155	92,155	30,752	30,752	61,403	61,403
1988.....	97,015	93,373	30,343	29,204	66,672	64,169
1989.....	102,055	94,060	28,554	26,317	73,501	67,743
1990.....	109,727	96,846	28,125	24,823	81,602	72,023

See explanatory information and SOURCE at end of table.

Table A-1. Trends in industrial R&D performance, by source of funds, in current and constant dollars: 1953–94 and preliminary estimates for 1995–96

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Year	Total R&D		Federal		Company 1/	
	Current dollars	Constant 1987 dollars	Current dollars	Constant 1987 dollars	Current dollars	Constant 1987 dollars
	[Dollars in millions]					
1991.....	\$116,952	\$99,449	\$26,372	\$22,425	\$90,580	\$77,024
1992.....	119,110	98,519	24,722	20,448	94,388	78,071
1993.....	117,400	95,061	22,809	18,469	94,591	76,592
1994	119,595	94,841	22,463	17,814	97,131	77,027
1995 (preliminary)	121,000	94,384	22,500	17,551	98,500	76,833
1996 (preliminary)	125,300	95,649	22,300	17,023	103,000	78,626

1/ Company funds include funds for industrial A:G&D work performed within company facilities from all sources except the Federal Government. The funds may be the companies' own or from outside organizations such as research institutions, universities and colleges, nonprofit organizations, other companies, and state governments. Company-financed R&D not performed within the company is excluded.

NOTES: 1987 gross domestic product implicit price deflators were used to convert current dollars to constant dollars.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-2. Summary data for R&D-performing companies in selected manufacturing and detailed nonmanufacturing industries: 1993-94

Page 1 of 2

Industry	SIC code	Research and development funds						Domestic net sales		R&D scientists & engineers		Domestic employment	
		Total		Federal		Company				January 1/	March	1994	1995
		1993	1994	1993	1994	1993	1994	1993	1994	1994	1995	1993	1994
		[Dollars in millions]						[In thousands]					
Total.....		#####	#####	\$22,809	\$22,463	\$94,591	\$97,131	#####	#####	768.5	749.2	16,585	17,443
Food and kindred products.....	20	1,305	(D)	0	0	1,305	(D)	283,417	286,050	10.0	(D)	1,066	1,056
Tobacco products.....	21	40	(D)	0	0	40	(D)	5,093	16,478	0.2	(D)	16	47
Textile mill products.....	22	(D)	(D)	(D)	(D)	220	242	41,205	39,611	2.4	2.2	359	349
Apparel.....	23	(D)	(D)	(D)	(D)	66	74	9,997	10,673	0.8	0.9	104	97
Lumber and wood products, except furniture.....	24	40	46	0	0	40	46	10,796	12,740	1.2	0.5	83	84
Furniture and fixtures.....	25	(D)	(D)	(D)	(D)	155	155	19,066	19,454	2.2	1.8	217	253
Paper and allied products.....	26	(D)	(D)	(D)	(D)	1,191	1,263	110,244	130,358	10.6	10.6	562	696
Printing, publishing, and allied industries.....	27	308	318	0	0	308	318	36,289	48,022	10.0	3.5	303	367
Chemicals and allied products...	28	(D)	(D)	(D)	(D)	16,658	16,559	278,581	322,039	93.1	91.5	1,196	1,225
Petroleum refining and extraction	13,29	2,152	1,950	14	10	2,138	1,939	238,345	235,280	9.7	9.0	385	376
Rubber products.....	30	(D)	(D)	(D)	(D)	1,059	1,432	51,422	62,223	9.0	8.8	378	456
Leather and leather products....	31	(D)	40	(D)	0	23	40	2,782	7,089	0.2	0.3	23	46
Stone, clay, and glass products.	32	538	591	9	38	529	553	35,168	35,778	4.0	4.3	245	221
Primary metals.....	33	669	690	23	17	646	672	94,448	116,624	5.1	6.7	452	482
Fabricated metal products.....	34	1,158	1,111	222	243	936	868	83,266	91,075	10.2	9.5	604	612
Machinery.....	35	8,381	8,110	86	99	8,295	8,011	182,978	210,835	70.4	66.3	1,145	1,143
Electrical equipment.....	36	13,349	15,338	1,667	1,801	11,682	13,537	215,494	259,693	96.5	105.5	1,267	1,433
Transportation.....	37	27,258	28,087	10,617	10,392	16,640	17,695	426,245	477,508	129.6	115.8	1,830	1,812
Professional and scientific instruments.....	38	10,119	11,441	2,577	3,384	7,542	8,058	104,694	124,541	100.6 (S)	90.6 (S)	738	791
Miscellaneous manufacturing industries.....	39	(D)	(D)	(D)	(D)	427	438	21,454	17,698	5.3	3.9	167	131
Communication services.....	48	(D)	(D)	(D)	(D)	4,320	4,177	182,339	200,993	29.5	30.1	917	884
Electric, gas, and sanitary services.....	49	342	403	46	82	295	321	185,580	187,791	1.6	1.9	566	565

See explanatory information and SOURCE at end of table.

Table A-2. Summary data for R&D-performing companies in selected manufacturing and detailed nonmanufacturing industries: 1993–94

Page 2 of 2

Industry	SIC code	Research and development funds						Domestic net sales		R&D scientists & engineers		Domestic employment	
		Total		Federal		Company				January 1/	March	1994	1995
		1993	1994	1993	1994	1993	1994	1993	1994	1994	1995	1993	1994
		[Dollars in millions]										[In thousands]	
Computer programming, data processing, other computer-related engineering, architectural, and surveying services.....	737,871	\$10,092	\$7,929	\$2,367	\$1,470	\$7,725	\$6,459	\$49,578	\$79,545	73	77	427	641
Hospitals and medical and dental laboratories.....	806-07	(D)	(D)	(D)	(D)	60	342 (S)	2,557	6,071	0.5	1.7 (S)	34	45 (S)
Research, development, and testing services.....	873	2,541	3,765	1,141	1,972	1,400	1,794	4,544	6,855	22.0	28.0	82	65
Other nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-47, 50-59, 60-65, 67, 701, 73 (except 737), 75-76, 78-79, 80-81 (except 806 and 807), 83-84, 87 (except 871 and 873), 89	12,215	10,951	1,325	288	10,890	10,663	533,285	590,257	70.6	70.4	3,423	3,565

1/ Data recorded in January represent employment figures for the previous year.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-3. Total (company, Federal, and other) funds for industrial R&D performance, by industry and size of company: 1984-94

Page 1 of 2

Industry and size of company	SIC code	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	
		[Dollars in millions]											
Total.....		\$74,800	\$84,239	\$87,823	\$92,155	\$97,015	\$102,055	\$109,727	\$116,952	\$119,110	\$117,400	\$119,595	
Distribution by industry:													
Food, kindred, and tobacco products..	20,21	(D)	(D)	(D)	1,206	(D)	(D)	(D)	1,277	1,386	1,345	1,476	
Textiles and apparel.....	22,23	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
Lumber, wood products, and furniture.	24,25	143	147	144	137	(D)	192	216	(D)	(D)	(D)	(D)	
Paper and allied products.....	26	(D)	(D)	(D)	(D)	(D)	879	1,059	(D)	(D)	(D)	(D)	
Chemicals and allied products.....	28	7,927	8,540	8,843	9,635	11,067	12,069	13,291	14,648	15,381	(D)	(D)	
Industrial chemicals.....	281-82,286	3,240	3,498	3,552	3,716	4,172	4,451	5,010	5,390	5,165	(D)	(D)	
Drugs and medicines.....	283	(D)	(D)	3,658	(D)	4,906	(D)	(D)	(D)	7,944	9,146	9,633	
Other chemicals.....	284-85,287-89	(D)	(D)	1,633	(D)	1,989	(D)	(D)	(D)	2,272	(D)	(D)	
Petroleum refining and extraction.....	13,29	(D)	(D)	(D)	1,897	1,997	2,180	2,306	2,498	2,277	2,152	1,950	
Rubber products.....	30	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
Stone, clay, and glass products.....	32	(D)	(D)	950	995	(D)	(D)	(D)	(D)	(D)	538	591	
Primary metals.....	33	(D)	(D)	(D)	730	637	686	739	714	522	669	690	
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	(D)	(D)	253	(D)	(D)	(D)	(D)	289	(D)	
Nonferrous metals and products....	333-36	336	416	458	(D)	384	(D)	(D)	(D)	(D)	380	(D)	
Fabricated metal products.....	34	842	829	895	783	881	904	939	974	1,017	1,158	1,111	
Machinery.....	35	10,504	12,216	(D)	(D)	(D)	(D)	14,446	14,775	14,938	8,381	8,110	
Office, computing, and accounting machines.....	357	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	4,950	4,106	
Other machinery, except electrical..	351-56,358-59	(D)	(D)	2,396	2,428	2,682	2,729	(D)	(D)	(D)	3,431	4,004	
Electrical equipment.....	36	13,778	14,432	14,980	15,848	14,128	13,318	13,400	13,415	13,360	13,349	15,338	
Radio and TV receiving equipment.	365	(D)	(D)	133	139	149	96	114	(D)	(D)	(D)	(D)	
Communication equipment.....	366	8,685	9,397	9,669	10,184	8,427	7,071	5,928	4,787	(D)	(D)	(D)	
Electronic components.....	367	2,831	3,385	(D)	4,286	4,133	4,025	3,914	(D)	3,567	5,311	6,032	
Other electrical equipment.....	361-64,369	(D)	(D)	(D)	1,239	1,419	2,126	3,444	(D)	(D)	(D)	(D)	
Transportation equipment.....	37	(D)	(D)	31,275	34,246	34,775	33,859	31,361	27,428	27,494	27,258	28,087	
Motor vehicles and motor vehicles equipment.....	371	6,057	6,984	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
Aircraft and missiles.....	372,376	18,858	22,231	21,050	24,458	24,168	22,331	20,635	16,629	17,158	15,056	14,260	

See explanatory information and SOURCE at end of table.

Table A-3. Total (company, Federal, and other) funds for industrial R&D performance, by industry and size of company: 1984-94

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Industry and size of company	SIC code	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	
		[Dollars in millions]											
Distribution by industry:													
Professional and scientific instruments	38	\$4,602	\$5,013	\$5,103	\$5,222	\$5,530	\$5,992	\$7,055	\$8,705	\$9,542	\$10,119	\$11,441	
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	(D)	(D)	1,959	2,366	3,346	(D)	5,156	5,681	6,952	
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	(D)	(D)	3,571	3,626	3,709	(D)	4,386	4,438	4,489	
Other manufacturing industries	27,31,39	(D)	(D)	382	(D)	(D)	(D)	(D)	(D)	660	(D)	(D)	
Nonmanufacturing industries 1/.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	4,905	6,714	7,446	7,844	10,513	14,031	20,793	28,446	28,933	30,831	28,846	
Distribution by size of company: [Number of employees]													
Total.....		74,800	84,239	87,823	92,155	97,015	102,055	109,727	116,952	119,110	117,400	119,595	
Fewer than 500		4,402	5,866	7,071	7,163	(S)	7,809	(S)	13,172	13,557	14,620	13,966	
500 to 999		1,439	1,648	1,902	1,725	1,669	1,825	2,154	8,000	7,958	3,230	3,608	
1,000 to 4,999.....		5,520	6,240	7,472	7,262	7,622	7,881	8,411	10,453	11,886	13,334	14,617	
5,000 to 9,999.....		3,251	4,022	4,251	4,501	5,245	5,756	6,746	8,049	8,258	9,135	8,912	
10,000 to 24,999.....		11,351	11,109	10,493	12,043	11,506	10,450	12,486	15,770	15,744	15,421	15,972	
25,000 or more.....		48,837	55,354	56,991	59,461	63,694	68,335	71,030	61,508	61,707	61,659	62,519	

1/ Nonmanufacturing industries for 1990 and prior years included the following SICs only: 10-11, 14-17, 40-42, 44-51, 53-54, 56, 60, 62-63, 72-73, 78, 806-07, and 87.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NOTE: As a result of a new sample design, statistics for 1988-91 have been revised since originally published.

These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-4. Total (company, Federal, and other) funds for industrial R&D performance, by industry and size of company: 1994

Page 1 of 2

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
Total.....		\$119,595	\$13,966	\$3,608	\$14,617	\$8,912	\$15,972	\$62,519
Food, kindred, and tobacco products.....	20,21	1,476	101	60	178	216	158	762
Textiles and apparel.....	22,23	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Lumber, wood products, and furniture.....	24,25	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Paper and allied products.....	26	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Chemicals and allied products.....	28	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Industrial chemicals.....	281-82,286	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Drugs and medicines.....	283	9,633	408	80	1,731	763	3,752	2,899
Other chemicals.....	284-85,287-89	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	1,950	32	6	88	57	570	1,199
Rubber products.....	30	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stone, clay, and glass products.....	32	591	87	(D)	97	76	230	(D)
Primary metals.....	33	690	120	34	158	125	(D)	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Nonferrous metals and products.....	333-36	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Fabricated metal products.....	34	1,111	238	(D)	410	122	224	(D)
Machinery.....	35	8,110	1,509	532	2,231	1,305	(D)	(D)
Office, computing, and accounting machines.....	357	4,106	443	207	1,350	908	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	4,004	1,065	325	881	397	(D)	(D)
Electrical equipment.....	36	15,338	1,482	587	2,128	941	2,547	7,652
Radio and TV receiving equipment.....	365	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Communication equipment.....	366	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Electronic components.....	367	6,032	612	371	916	748	(D)	(D)
Other electrical equipment.....	361-64,369	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Transportation equipment.....	37	28,087	87	141	555	444	1,110	25,749
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	14,260	40	(D)	325	185	(D)	12,795
Professional and scientific instruments.....	38	11,441	1,308	557	1,367	794	213	7,202
Scientific and mechanical measuring instruments.....	381-82	6,952	(D)	356	630	288	(D)	4,877
Optical, surgical, photographic, and other instruments.....	384-87	4,489	(D)	201	736	506	(D)	2,325

See explanatory information and SOURCE at end of table.

Table A-4. Total (company, Federal, and other) funds for industrial R&D performance, by industry and size of company: 1994

Page 2 of 2

Industry	SIC code	Total	Size of Company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
Other manufacturing industries.....	27,31,39	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	28,846	7,497	1,122	3,745	2,933	2,435	11,113

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-5. Total (company, Federal, and other) funds for industrial R&D performance, by industry, size of company, and size of R&D program: 1994

Page 1 of 2

Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$1 million to \$9.9 million	\$10 million to \$99.9 million	\$100 million or more
			[Dollars in millions]				
Total.....		\$119,595	\$1,192	\$3,914	\$10,582	\$20,647	\$83,259
Distribution by industry:							
Food, kindred, and tobacco products..	20,21	1,476	(D)	65	218	711	(D)
Textiles and apparel.....	22,23	(D)	(D)	32	131	158	0
Lumber, wood products, and furniture.	24,25	(D)	(D)	31	56	97	0
Paper and allied products.....	26	(D)	12	24	124	387	(D)
Chemicals and allied products.....	28	(D)	(D)	145	743	2,616	14,241
Industrial chemicals.....	281-82,286	(D)	(D)	53	232	930	4,779
Drugs and medicines.....	283	9,633	11	71	331	1,004	8,216
Other chemicals.....	284-85,287-89	(D)	(D)	22	181	681	1,246
Petroleum refining and extraction.....	13,29	1,950	8	24	77	290	1,551
Rubber products.....	30	(D)	(D)	353	334	352	457
Stone, clay, and glass products.....	32	591	7	63	69	451	0
Primary metals.....	33	690	(D)	39	242	263	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	17	96	123	0
Nonferrous metals and products....	333-36	(D)	6	22	146	140	(D)
Fabricated metal products.....	34	1,111	(D)	121	324	453	(D)
Machinery.....	35	8,110	138	791	1,097	2,022	4,061
Office, computing, and accounting machines.....	357	4,106	22	115	324	744	2,901
Other machinery, except electrical..	351-56,358-59	4,004	116	676	774	1,279	1,160
Electrical equipment.....	36	15,338	101	342	1,275	2,926	10,694
Radio and TV receiving equipment.	365	(D)	2	14	37	(D)	0
Communication equipment.....	366	(D)	21	125	380	923	(D)
Electronic components.....	367	6,032	28	75	502	1,309	4,118
Other electrical equipment.....	361-64,369	(D)	50	128	356	(D)	(D)
Transportation equipment.....	37	28,087	41	65	231	929	26,821
Motor vehicles and motor vehicles equipment.....	371	(D)	12	20	159	(D)	(D)
Other transportation equipment....	373-75,379	(D)	22	14	44	(D)	(D)
Aircraft and missiles.....	372,376	14,260	6	31	28	328	13,867
Professional and scientific instruments	38	11,441	83	285	1,140	2,264	7,669
Scientific and mechanical measuring instruments.....	381-82	6,952	36	227	481	1,185	5,023
Optical, surgical, photographic, and other instruments.....	384-87	4,489	47	58	659	1,079	2,646

See explanatory information and SOURCE at end of table.

Table A-5. Total (company, Federal, and other) funds for industrial R&D performance, by industry size of company, and size of R&D program: 1994

Page 2 of 2

Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$1 million to \$9.9 million	\$10 million to \$99.9 million	\$100 million or more
			[Dollars in millions]				
Other manufacturing industries.....	27,31,39	(D)	(D)	\$107	\$317	\$350	\$0
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	28,846	542	1,428	4,204	6,379	16,292
Distribution by size of company: [Number of employees]							
Total.....		119,595	1,192	3,914	10,582	20,647	83,259
Fewer than 500.....		13,966	1,161	3,606	6,396	2,803	0
500 to 999.....		3,608	(D)	150	1,297	2,022	(D)
1,000 to 4,999.....		14,617	(D)	124	2,266	8,279	(D)
5,000 to 9,999.....		8,912	1	20	317	2,923	5,651
10,000 to 24,999.....		15,972	0	11	217	3,207	12,536
25,000 or more.....		62,519	0	3	88	1,414	61,014

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

**Table A-6. Number of R&D-performing companies, by industry, size of company,
and size of R&D program: 1994**

Page 1 of 2

Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$1 million to \$9.9 million	\$10 million to \$99.9 million	\$100 million or more
Total.....		40,878	27,208	8,250	4,548	726	147
Food, kindred, and tobacco products.....	20,21	864	619	151	65	27	2
Textiles and apparel.....	22,23	302	160	85	49	8	0
Lumber, wood products, and furniture.....	24,25	733	622	77	27	6	0
Paper and allied products.....	26	687	590	43	38	14	2
Chemicals and allied products.....	28	1,798	1,173	316	194	79	36
Industrial chemicals.....	281-82,286	457	220	129	73	23	12
Drugs and medicines.....	283	400	141	142	68	29	20
Other chemicals.....	284-85,287-89	941	812	45	53	27	4
Petroleum refining and extraction.....	13,29	189	102	55	16	9	7
Rubber products.....	30	1,257	332	801	109	13	3
Stone, clay, and glass products.....	32	366	230	97	25	13	0
Primary metals.....	33	507	272	123	97	14	1
Ferrous metals and products.....	331-32,3398-99	247	166	47	27	7	0
Nonferrous metals and products.....	333-36	260	106	76	70	7	1
Fabricated metal products.....	34	1,883	1,429	304	134	15	1
Machinery.....	35	5,186	3,092	1,672	331	73	18
Office, computing, and accounting machines.....	357	514	171	219	85	26	13
Other machinery, except electrical.....	351-56,358-59	4,672	2,921	1,453	246	47	5
Electrical equipment.....	36	3,025	1,728	760	424	96	17
Radio and TV receiving equipment.....	365	109	68	27	13	1	0
Communication equipment.....	366	616	185	268	129	27	6
Electronic components.....	367	1,224	821	178	174	43	8
Other electrical equipment.....	361-64,369	1,077	655	286	107	25	3
Transportation equipment.....	37	951	678	146	79	30	18
Motor vehicles and motor vehicles equipment.....	371	394	286	34	57	14	4
Other transportation equipment.....	373-75,379	368	306	44	13	3	2
Aircraft and missiles.....	372,376	189	86	68	9	13	12
Professional and scientific instruments..	38	2,357	1,334	650	290	72	11
Scientific and mechanical measuring instruments.....	381-82	1,272	606	484	139	37	6
Optical, surgical, photographic, and other instruments.....	384-87	1,085	728	166	151	35	5
Other manufacturing industries.....	27,31,39	908	508	282	106	11	0
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	19,868	14,339	2,687	2,565	246	31

See explanatory information and SOURCE at end of table.

**Table A-6. Number of R&D-performing companies, by industry, size of company,
and size of R&D program: 1994**

Page 2 of 2

Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$1 million to \$9.9 million	\$10 million to \$99.9 million	\$100 million or more
Distribution by size of company: [Number of employees]							
Total.....		40,878	27,208	8,250	4,548	726	147
Fewer than 500.....		38,074	26,912	7,639	3,377	146	0
500 to 999.....		995	144	320	443	87	1
1,000 to 4,999.....		1,238	136	233	582	263	24
5,000 to 9,999.....		253	11	34	79	104	25
10,000 to 24,999.....		191	4	18	46	87	36
25,000 or more.....		127	1	5	21	39	61

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-7. Company and other (except Federal) funds for industrial R&D performance, by industry and size of company: 1984-94

Page 1 of 2

Industry and size of company	SIC code	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	
		[Dollars in millions]											
Total.....		\$51,404	\$57,043	\$59,932	\$61,403	\$66,672	\$73,501	\$81,602	\$90,580	\$94,388	\$94,591	\$97,131	
Distribution by industry:													
Food, kindred, and tobacco products..	20,21	1,081	1,136	1,280	1,204	1,173	1,244	1,248	1,277	1,386	1,345	1,476	
Textiles and apparel.....	22,23	182	218	246	243	215	(S)	260	236	261	286	316	
Lumber, wood products, and furniture..	24,25	143	147	144	137	165	192	216	200	234	196	201	
Paper and allied products.....	26	594	576	538	604	752	879	1,059	1,174	1,182	1,191	1,263	
Chemicals and allied products.....	28	7,736	8,310	8,664	9,445	10,828	11,943	13,168	14,439	15,091	16,658	16,559	
Industrial chemicals.....	281-82,286	3,057	3,281	3,374	3,531	3,939	4,340	4,902	5,225	4,911	5,165	4,780	
Drugs and medicines.....	283	3,310	3,481	3,657	4,095	4,900	5,512	5,917	6,947	7,934	9,132	9,625	
Other chemicals.....	84-85,287-89	1,369	1,548	1,633	1,819	1,989	2,091	2,349	2,267	2,246	2,361	2,154	
Petroleum refining and extraction.....	13,29	2,245	2,194	1,971	1,883	1,975	2,162	2,289	2,487	2,268	2,138	1,939	
Rubber products.....	30	671	659	655	596	718	867	1,056	(D)	1,256	1,059	1,432	
Stone, clay, and glass products.....	32	705	825	941	985	697	615	538	455	479	529	553	
Primary metals.....	33	683	730	786	711	620	666	717	706	514	646	672	
Ferrous metals and products.....	1-32,3398-99	357	323	336	249	252	244	231	225	221	272	241	
Nonferrous metals and products.....	333-36	326	407	450	462	368	422	486	481	293	374	431	
Fabricated metal products.....	34	773	780	800	633	718	726	736	748	723	936	868	
Machinery.....	35	9,312	10,721	10,701	10,577	11,929	13,342	13,575	13,720	13,903	8,295	8,011	
Office, computing, and accounting machines.....	357	7,011	8,418	8,380	8,193	9,347	10,725	10,988	10,419	10,614	4,917	4,078	
Other machinery, except electrical.....	51-56,358-59	2,301	2,303	2,321	2,384	2,582	2,618	2,587	3,301	3,289	3,378	3,933	
Electrical equipment.....	36	9,037	9,271	9,767	10,449	9,975	9,575	9,267	8,865	9,516	11,682	13,537	
Radio and TV receiving equipment..	365	362	350	133	139	149	96	114	(D)	93	87	64	
Communication equipment.....	366	5,147	5,174	5,117	5,455	4,798	4,159	3,584	(S)	3,381	3,954	4,939	
Electronic components.....	367	2,354	2,826	3,357	3,630	3,684	3,655	3,496	3,177	3,320	5,105	5,870	
Other electrical equipment.....	361-64,369	1,174	921	1,160	1,225	1,345	1,664	2,073	(D)	2,722	2,537	2,664	
Transportation equipment.....	37	10,406	12,092	13,567	13,462	13,910	14,596	14,264	14,858	16,292	16,640	17,695	
Motor vehicles and motor vehicles equipment.....	371	5,384	6,164	7,171	7,167	7,783	8,756	8,594	9,063	9,132	10,659	11,950	
Other transportation equipment.....	373-75,379	258	279	330	356	361	337	283	262	289	297	279	
Aircraft and missiles.....	372,376	4,764	5,649	6,066	5,939	5,766	5,503	5,387	5,533	6,871	5,684	5,466	

See explanatory information and SOURCE at end of table.

Table A-7. Company and other (except Federal) funds for industrial R&D performance, by industry and size of company: 1984-94

Page 2 of 2

Industry and size of company	SIC code	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
		[Dollars in millions]										
Distribution by industry:												
Professional and scientific instruments	38	\$4,211	\$4,622	\$4,752	\$4,950	\$5,339	\$5,729	\$6,318	\$6,840	\$7,321	\$7,542	\$8,058
Scientific and mechanical measuring instruments	381-82	1,671	1,596	1,521	1,598	1,863	2,205	2,696	3,017	3,013	3,196	3,687
Optical, surgical, photographic, and other instruments	384-87	2,540	3,026	3,231	3,352	3,476	3,524	3,621	3,823	4,308	4,346	4,371
Other manufacturing industries	27,31,39	373	361	380	380	401	438	541	(D)	599	758	796
Nonmanufacturing industries 1/	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	3,252	4,401	4,740	5,144	7,257	10,302	16,351	22,941	23,363	24,690	23,756
Distribution by size of company: [Number of employees]												
Total		51,404	57,043	59,932	61,403	66,672	73,501	81,602	90,580	94,388	94,591	97,131
Fewer than 500		3,781	5,127	6,203	6,200	(S)	(S)	(S)	11,285	11,532	13,006	12,802
500 to 999		1,341	1,531	1,765	1,610	1,748	1,934	2,144	7,819	7,807	3,048	3,426
1,000 to 4,999		4,618	5,249	6,243	6,281	6,820	7,546	8,363	9,403	10,865	12,219	13,533
5,000 to 9,999		2,764	3,350	3,455	3,753	4,075	4,509	4,997	7,233	7,495	8,371	8,087
10,000 to 24,999		8,546	8,366	8,489	9,681	10,512	11,631	12,890	12,397	12,328	12,606	13,625
25,000 or more		30,354	33,420	33,777	33,878	36,785	40,703	45,106	42,443	44,361	45,340	45,658

1/ Nonmanufacturing industries for 1990 and prior years included the following SICs only: 10-11, 14-17, 40-42, 44-51, 53-54, 56, 60, 62-63, 72-73, 78, 806-07, and 89.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NOTES: Company funds include funds for industrial R&D work performed within company facilities from all sources except the Federal Government.

The funds may be the companies' own or from outside organizations such as research institutions, universities and colleges,

nonprofit organizations, other companies, and state governments. Company-financed R&D not performed within the company is excluded.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-8. Company and other (except Federal) funds for industrial R&D performance, by industry and size of company: 1994

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
Total.....		\$97,131	\$12,802	\$3,426	\$13,533	\$8,087	\$13,625	\$45,658
Food, kindred, and tobacco products.....	20,21	1,476	101	60	178	216	158	762
Textiles and apparel.....	22,23	316	45	23	139	(D)	90	(D)
Lumber, wood products, and furniture.....	24,25	201	40	14	50	80	(D)	(D)
Paper and allied products.....	26	1,263	34	15	94	117	282	721
Chemicals and allied products.....	28	16,559	705	216	2,872	1,434	5,860	5,471
Industrial chemicals.....	281-82,286	4,780	159	(D)	672	407	1,482	(D)
Drugs and medicines.....	283	9,625	402	80	1,729	763	3,751	2,898
Other chemicals.....	284-85,287-89	2,154	143	(D)	470	264	627	(D)
Petroleum refining and extraction.....	13,29	1,939	31	6	88	57	568	1,190
Rubber products.....	30	1,432	465	(D)	315	77	110	(D)
Stone, clay, and glass products.....	32	553	55	(D)	92	75	230	(D)
Primary metals.....	33	672	120	34	153	119	(D)	(D)
Ferrous metals and products.....	331-32,3398-99	241	22	4	70	74	(D)	(D)
Nonferrous metals and products.....	333-36	431	98	30	83	45	(D)	(D)
Fabricated metal products.....	34	868	233	58	238	(D)	181	(D)
Machinery.....	35	8,011	1,473	529	2,221	1,287	(D)	(D)
Office, computing, and accounting machines.....	357	4,078	434	207	1,342	902	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	3,933	1,039	322	880	385	(D)	(D)
Electrical equipment.....	36	13,537	1,453	585	2,097	926	2,546	5,930
Radio and TV receiving equipment.....	365	64	27	8	29	0	0	0
Communication equipment.....	366	4,939	525	113	861	(D)	(D)	(D)
Electronic components.....	367	5,870	603	369	885	734	(D)	(D)
Other electrical equipment.....	361-64,369	2,664	298	94	322	(D)	371	(D)
Transportation equipment.....	37	17,695	82	126	458	416	457	16,155
Motor vehicles and motor vehicles equipment.....	371	11,950	12	79	179	156	(D)	(D)
Other transportation equipment.....	373-75,379	279	35	(D)	51	(D)	(D)	(D)
Aircraft and missiles.....	372,376	5,466	35	(D)	228	(D)	218	4,781
Professional and scientific instruments....	38	8,058	1,227	454	1,308	770	164	4,134
Scientific and mechanical measuring instruments.....	381-82	3,687	(D)	260	574	271	(D)	1,895
Optical, surgical, photographic, and other instruments.....	384-87	4,371	(D)	194	735	499	(D)	2,239
Other manufacturing industries	27, 31, 39	796	206	(D)	181	181	172	(D)
Nonmanufacturing industries	07-10, 12-17, 40- 42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-8, 87, 89	23,756	6,532	1,066	3,049	2,223	1,080	9,805

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-9. Company-financed R&D contracted to outside organizations, by industry and size of company: 1991, 1993, and 1994

Page 1 of 2

Industry	SIC code	1991	1993	1994
		[Dollars in millions]		
Total.....		\$3,319	\$3,462	\$3,618
Distribution by industry:				
Food, kindred, and tobacco products.....	20,21	44	43	43
Textiles and apparel.....	22,23	(D)	2	4
Lumber, wood products, and furniture.....	24,25	(D)	8	8
Paper and allied products.....	26	12	5	4
Chemicals and allied products.....	28	1,087	1,117	1,239
Industrial chemicals.....	281-82,286	95	43	38
Drugs and medicines.....	283	771	942	1,055
Other chemicals.....	284-85,287-89	221	132	146
Petroleum refining and extraction.....	13,29	35	56	52
Rubber products.....	30	18	65	22
Stone, clay, and glass products.....	32	(D)	2	6
Primary metals.....	33	24	12	15
Ferrous metals and products.....	331-32,3398-99	4	8	10
Nonferrous metals and products.....	333-36	20	4	5
Fabricated metal products.....	34	3	21	21
Machinery.....	35	256	125	200
Office, computing, and accounting machines.....	357	229	52	113
Other machinery, except electrical.....	351-56,358-59	27	73	87
Electrical equipment.....	36	114	143	116
Radio and TV receiving equipment.....	365	0	(D)	1
Communication equipment.....	366	63	20	38
Electronic components.....	367	38	24	24
Other electrical equipment.....	361-64,369	13	(D)	54
Transportation equipment.....	37	687	(D)	591
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(S)	(D)	(D)
Aircraft and missiles.....	372,376	(D)	52	83
Professional and scientific instruments.....	38	(D)	189	57
Scientific and mechanical measuring instruments.....	381-82	4	25	16
Optical, surgical, photographic, and other instruments..	384-87	(D)	163	40
Other manufacturing industries.....	27,31,39	2	31	72
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	742	1,123	1,168

See explanatory information and SOURCE at end of table.

Table A-9. Company-financed R&D contracted to outside organizations, by industry and size of company: 1991, 1993, and 1994

Page 2 of 2

Industry	SIC code	1991	1993	1994
		[Dollars in millions]		
Distribution by size of company: [Number of employees]				
Total.....		\$3,319	\$3,462	\$3,618
Fewer than 500.....		(S)	751	724
500 to 999.....		35	107	126
1,000 to 4,999.....		275	310	397
5,000 to 9,999.....		218	327	408
10,000 to 24,999.....		881	468	391
25,000 or more.....		1762	1,497	1,574

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.
(S) = Indicates imputation of more than 50 percent.

NOTE: As a result of a new sample design and corrections to reported data, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-10. Number of companies contracting R&D performance to outside organizations and total number of R&D-performing companies, by industry and size of company: 1994

Page 1 of 2

Industry	SIC code	Size of company											
		Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside
Total.....		38,074	3,983	995	106	1,238	212	253	59	191	34	127	37
Food, kindred, and tobacco products.....	20,21	622	96	122	6	76	9	20	6	13	4	11	2
Textiles and apparel.....	22,23	194	44	34	4	57	6	7	1	9	0	1	0
Lumber, wood products, and furniture.....	24,25	652	20	31	7	38	5	9	0	1	0	2	0
Paper and allied products.....	26	617	0	10	2	36	7	10	1	9	1	5	0
Chemicals and allied products.....	28	1,599	298	61	8	84	15	22	4	22	7	10	5
Industrial chemicals.....	281-82,286	372	105	40	1	27	4	6	0	8	2	5	1
Drugs and medicines.....	283	346	119	8	4	27	6	6	1	9	4	4	3
Other chemicals.....	284-85,287-89	882	75	13	3	30	5	10	3	5	1	1	1
Petroleum refining and extraction.....	13,29	148	12	7	0	17	4	3	1	7	2	6	3
Rubber products.....	30	1,145	10	41	4	59	6	7	0	3	0	2	1
Stone, clay, and glass products.....	32	316	64	19	2	20	8	5	0	5	0	1	1
Primary metals.....	33	394	8	43	1	46	12	17	6	5	2	3	1
Ferrous metals and products.....	331-32,3398-99	185	3	15	0	31	9	13	5	2	1	1	1
Nonferrous metals and products.....	333-36	208	5	27	1	15	3	4	1	3	1	2	0
Fabricated metal products.....	34	1,719	171	57	5	92	6	4	0	10	1	1	1
Machinery.....	35	4,895	687	133	11	122	13	20	4	13	0	3	2
Office, computing, and accounting machines.....	357	461	53	20	0	25	3	5	1	2	0	1	1
Other machinery, except electrical.....	351-56,358-59	4,434	635	113	11	97	10	15	3	11	0	2	1
Electrical equipment.....	36	2,787	250	91	13	111	13	13	3	13	1	10	2
Radio and TV receiving equipment.....	365	100	13	4	1	5	0	0	0	0	0	0	0
Communication equipment.....	366	567	122	18	4	25	2	1	0	2	0	3	0
Electronic components.....	367	1,146	7	30	5	37	3	7	1	2	0	2	1
Other electrical equipment.....	361-64,369	975	107	39	3	44	8	5	2	9	1	5	1

See explanatory information and SOURCE at end of table.

Table A-10. Number of companies contracting R&D performance to outside organizations and total number of R&D-performing companies, by industry and size of company: 1994

Page 2 of 2

Industry	SIC code	Size of company											
		Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside
Transportation equipment.....	37	782	131	66	4	61	13	17	4	11	2	14	4
Motor vehicles and motor vehicles equipment.....	371	284	71	54	2	36	7	10	2	6	1	4	1
Other transportation equipment.....	373-75,379	345	30	8	2	10	2	2	1	2	0	2	0
Aircraft and missiles.....	372,376	154	29	4	0	15	4	5	1	3	1	8	3
Professional and scientific instruments.....	38	2,204	281	69	7	63	14	10	1	3	0	8	1
Scientific and mechanical measuring instruments.....	381-82	1,195	125	44	5	21	2	5	0	2	0	5	1
Optical, surgical, photographic, and other instruments.....	384-87	1,009	156	25	2	42	12	5	1	1	0	3	0
Other manufacturing industries.....	27,31,39	795	97	34	6	52	10	16	2	9	0	2	0
Nonmanufacturing industries	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	19,207	1,814	178	25	304	70	73	26	58	14	48	14

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-11. Company-financed R&D performed outside the United States by U.S. domestic companies and their foreign subsidiaries, by selected industry: 1984-94

Page 1 of 1

Industry	SIC code	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
		[Dollars in millions]										
Total.....		\$3,633	\$3,650	\$4,624	\$5,226	\$6,208	\$6,706	\$7,952	\$9,147	\$10,063	\$9,565	\$9,395
Food, kindred, and tobacco products...	20,21	70	75	69	37	27	42	41	66	88	112	117
Chemicals and allied products.....	28	786	843	1,071	1,243	1,548	1,532	2,007	2,401	2,676	2,833	2,456
Industrial and other chemicals.....	281-82,284-89	385	444	579	625	855	609	720	1,009	1,045	1,318	917
Drugs and medicines.....	283	401	399	492	618	693	923	1,287	1,392	1,631	1,516	1,539
Petroleum refining and extraction.....	13,29	101	47	40	47	59	47	76	107	119	104	111
Stone, clay, and glass products.....	32	60	(D)	(D)	(D)	(D)	(D)	59	38	41	38	27
Primary metals.....	33	9	(D)	(D)	18	23	24	26	20	18	12	15
Fabricated metal products.....	34	21	21	26	40	(D)	(D)	95	86	109	119	125
Machinery.....	35	740	689	951	1,233	1,326	1,432	1,451	1,476	1,439	340	308
Electrical equipment.....	36	537	591	(S)	432	591	573	770	651	568	525	495
Radio and TV receiving equipment.....	365	(D)	(D)	(D)	0	(D)	(D)	(D)	2	(D)	(D)	3
Communication equipment.....	366	(D)	(D)	(D)	188	290	199	174	151	(D)	(D)	110
Electronic components.....	367	92	117	150	204	246	160	185	164	168	322	276
Other electrical equipment.....	361-64,369	30	24	25	39	(D)	(D)	(D)	334	217	113	107
Transportation equipment.....	37	907	1,025	(D)	(D)	1,750	1,916	2,055	2,402	(D)	(D)	(D)
Motor vehicles and other transportation equipment.....	371,373-75,379	(D)	(D)	(D)	(D)	1,477	1,501	1,901	2,166	(D)	(D)	(D)
Aircraft and missiles.....	372,376	(D)	(D)	182	237	273	415	154	236	493	(D)	251
Professional and scientific instruments.....	38	263	169	212	317	404	474	611	656	685	751	900
Other manufacturing industries.....	22-27,30-31,39	131	125	141	138	178	269	344	467	524	547	572
Nonmanufacturing industries 1/.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	8	18	27	64	146	256	415	778	835	1,770	1,500

1/ Nonmanufacturing industries for 1990 and prior years included the following SICs only: 10-11, 14-17, 40-42, 44-51, 53-54, 56, 60, 62-63, 72-73, 78, 806-07, and 87.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. Prior to 1993, data have been withheld.

NOTES: As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-12. Federal funds for industrial R&D performance, by industry and size of company: 1984-94

Page 1 of 2

Industry and size of company	SIC code	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	
		[Dollars in millions]											
Total.....		\$23,396	\$27,196	\$27,891	\$30,752	\$30,343	\$28,554	\$28,125	\$26,372	\$24,722	\$22,809	\$22,463	
Distribution by industry:													
Food, kindred, and tobacco products.....	20,21	(D)	(D)	(D)	2	(D)	(D)	(D)	0	0	0	0	0
Textiles and apparel.....	22,23	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(S)	(D)	(D)	(D)	(D)
Lumber, wood products, and furniture.....	24,25	0	0	0	0	(D)	0	0	(D)	(D)	(D)	(D)	(D)
Paper and allied products.....	26	(D)	(D)	(D)	(D)	(D)	0	0	(D)	(D)	(D)	(D)	(D)
Chemicals and allied products.....	28	191	230	179	190	238	126	123	209	(S)	(D)	(D)	(D)
Industrial chemicals.....	281-82,286	183	217	178	185	232	111	109	165	(S)	(D)	(D)	(D)
Drugs and medicines.....	283	(D)	(D)	1	(D)	6	(D)	(D)	(D)	(S)	15	8	
Other chemicals.....	284-85,287-89	(D)	(D)	0	(D)	0	(D)	(D)	(D)	(S)	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	(D)	(D)	(D)	14	22	(S)	(S)	11	9	14	10	
Rubber products.....	30	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stone, clay, and glass products.....	32	(D)	(D)	9	10	(D)	(D)	(D)	(D)	(D)	9	38	
Primary metals.....	33	(D)	(D)	(D)	19	17	22	(D)	8	(S)	23	17	
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	(D)	(D)	1	(D)	(D)	1	(D)	17	(D)	
Nonferrous metals and products.....	333-36	10	9	8	(D)	16	(D)	(D)	7	(D)	6	(D)	
Fabricated metal products.....	34	69	49	95	150	163	178	203	226	294	222	243	
Machinery.....	35	1,192	1,495	(D)	(D)	(D)	(D)	871	1,055	1,035	86	99	
Office, computing, and accounting machines.....	357	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	33	28	
Other machinery, except electrical.....	351-56,358-59	(D)	(D)	75	44	101	112	(D)	(D)	(D)	53	71	
Electrical equipment.....	36	4,741	5,161	5,213	5,399	4,153	3,743	4,133	4,550	3,844	1,667	1,801	
Radio and TV receiving equipment.....	365	(D)	(D)	0	0	0	0	0	0	(D)	(D)	(D)	
Communication equipment.....	366	3,538	4,223	4,552	4,729	3,630	2,911	2,344	(D)	(D)	(D)	(D)	
Electronic components.....	367	477	559	(D)	656	449	369	418	(D)	247	206	162	
Other electrical equipment.....	361-64,369	(D)	(D)	(D)	14	74	463	1,371	(D)	(D)	(D)	(D)	
Transportation equipment.....	37	(D)	(D)	17,708	20,784	20,865	19,262	17,097	12,570	11,202	10,617	10,392	
Motor vehicles and motor vehicles equipment.....	371	673	820	(D)									
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
Aircraft and missiles.....	372,376	14,094	16,582	14,984	18,519	18,402	16,828	15,248	11,096	(S)	9,372	8,794	

See explanatory information and SOURCE at end of table.

Table A-12. Federal funds for industrial R&D performance, by industry and size of company: 1984-94

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Industry and size of company	SIC code	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	
		[Dollars in millions]											
Distribution by industry:													
Professional and scientific instruments.....	38	\$391	\$391	\$351	\$272	\$191	\$263	\$737	\$1,865	\$2,221	\$2,577	\$3,384	
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	(D)	(D)	(S)	(S)	(S)	(D)	2,143	2,484	3,266	
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	(D)	(D)	95	101	87	(D)	78	92	118	
Other manufacturing industries	27,31,39	(D)	(D)	2	(D)	(D)	(D)	(D)	(D)	61	(D)	(D)	
Nonmanufacturing industries 1/.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	1,653	2,313	2,706	2,700	3,256	3,729	4,442	5,505	5,570	6,140	5,090	
Distribution by size of company: [Number of employees]													
Total.....		23,396	27,196	27,891	30,752	30,343	28,554	28,125	26,372	24,722	22,809	22,463	
Fewer than 500		621	739	868	963	816	901	895	1,887	2,025	1,614	1,164	
500 to 999		98	117	137	115	131	117	(S)	181	151	182	182	
1,000 to 4,999.....		902	991	1,229	981	1,093	958	881	1,050	(S)	1,115	1,083	
5,000 to 9,999.....		487	672	796	748	864	740	257	816	763	764	825	
10,000 to 24,999.....		2,805	2,743	2,004	2,362	1,705	1,129	1,526	3,373	3,416	2,816	2,348	
25,000 or more.....		18,483	21,934	23,213	25,583	25,734	24,709	24,436	19,065	17,346	16,319	16,862	

1/ Nonmanufacturing industries for 1990 and prior years included the following SICs only: 10-11, 14-17, 40-42, 44-51, 53-54, 56, 60, 62-63, 72-73, 78, 806-07, and 87.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NOTE: As a result of a new sample design, statistics for 1988-91 have been revised since originally published.

These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-13. Number of R&D-performing companies reporting Federal R&D funds and total number of R&D-performing companies, by industry and size of company: 1994

Page 1 of 2

Industry	SIC code	Size of company											
		Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Total.....		38,074	1,041	995	37	1,238	62	253	24	191	31	127	51
Food, kindred, and tobacco products.....	20,21	622	0	122	0	76	0	20	0	13	0	11	0
Textiles and apparel.....	22,23	194	3	34	0	57	0	7	0	9	0	1	1
Lumber, wood products, and furniture.....	24,25	652	3	31	0	38	0	9	0	1	0	2	0
Paper and allied products.....	26	617	0	10	0	36	0	10	0	9	0	5	2
Chemicals and allied products.....	28	1,599	23	61	1	84	7	22	1	22	6	10	5
Industrial chemicals.....	281-82,286	372	0	40	0	27	4	6	1	8	3	5	4
Drugs and medicines.....	283	346	22	8	0	27	3	6	0	9	1	4	1
Other chemicals.....	284-85,287-89	882	1	13	1	30	0	10	0	5	2	1	0
Petroleum refining and extraction.....	13,29	148	1	7	0	17	0	3	0	7	2	6	3
Rubber products.....	30	1,145	0	41	0	59	0	7	0	3	1	2	0
Stone, clay, and glass products.....	32	316	64	19	0	20	3	5	1	5	0	1	1
Primary metals.....	33	394	3	43	0	46	2	17	2	5	2	3	1
Ferrous metals and products.....	331-32,3398-99	185	1	15	0	31	0	13	2	2	1	1	0
Nonferrous metals and products.....	333-36	208	2	27	0	15	2	4	0	3	1	2	1
Fabricated metal products.....	34	1,719	16	57	2	92	5	4	1	10	2	1	1
Machinery.....	35	4,895	157	133	3	122	4	20	3	13	2	3	2
Office, computing, and accounting machines.....	357	461	47	20	1	25	3	5	1	2	0	1	1
Other machinery, except electrical.....	351-56,358-59	4,434	110	113	2	97	1	15	2	11	2	2	1
Electrical equipment.....	36	2,787	116	91	3	111	6	13	3	13	1	10	6
Radio and TV receiving equipment.....	365	100	1	4	0	5	0	0	0	0	0	0	0
Communication equipment.....	366	567	8	18	0	25	1	1	0	2	0	3	2
Electronic components.....	367	1,146	9	30	1	37	5	7	2	2	0	2	1
Other electrical equipment.....	361-64,369	975	98	39	2	44	0	5	1	9	1	5	3
Transportation equipment.....	37	782	4	66	1	61	4	17	4	11	4	14	13
Motor vehicles and motor vehicles equipment.....	371	284	0	54	0	36	0	10	1	6	1	4	3
Other transportation equipment.....	373-75,379	345	1	8	0	10	0	2	0	2	0	2	2
Aircraft and missiles.....	372,376	154	3	4	1	15	4	5	3	3	3	8	8

See explanatory information and SOURCE at end of table.

**Table A-13. Number of R&D-performing companies reporting Federal R&D funds and total number of R&D-performing companies,
by industry and size of company: 1994**

Page 2 of 2

Industry	SIC code	Size of company											
		Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Professional and scientific instruments...	38	2,204	141	69	14	63	7	10	3	3	2	8	6
Scientific and mechanical measuring instruments.....	381-82	1,195	131	44	13	21	5	5	2	2	2	5	5
Optical, surgical, photographic, and other instruments.....	384-87	1,009	10	25	1	42	2	5	1	1	0	3	1
Other manufacturing industries.....	27,31,39	795	2	34	0	52	0	16	0	9	1	2	0
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	19,207	509	178	12	304	24	73	6	58	8	48	10

SOURCE: National Science Foundation/SRS, *Research and Development in Industry: 1994*

**Table A-14. Industry-administered federally funded R&D centers (FFRDCs)--funds by character of work,
full-time-equivalent (FTE) R&D scientists and engineers, and total number of employees: 1986-94**

Page 1 of 1

Item	1986	1987	1988	1989	1990	1991	1992	1993	1994
[Dollars in millions]									
Total R&D funds.....	\$1,891	\$1,995	\$2,122	\$2,195	\$2,323	\$2,277	\$2,353	\$1,965	\$2,202
Basic research.....	117	142	337	398	499	461	474	492	503
Applied research.....	629	623	371	374	386	433	507	435	503
Development.....	1,145	1,230	1,414	1,423	1,438	1,383	1,373	1,039	1,196
[Employment]									
Number of FTE R&D scientists and engineers 1/.....	7,432	8,432	10,994	11,618	12,438	11,977	11,770	8,083	8,362
Total employment 2/.....	24,156	33,804	36,143	35,716	42,153	39,697	40,755	23,930	23,905

1/ These data were recorded in January of the year following that indicated.

2/ These data were recorded in March of the year indicated.

NOTE: Industry-administered Federally funded research and development centers (FFRDCs) conduct R&D almost exclusively for use by the Federal Government. Data for these FFRDCs administered by industry are included in Federal R&D support under the industry classifications of the administering firms. See section B for a listing of industry-administered FFRDCs and their locations.

SOURCE: National Science Foundation/SRS, *Research and Development in Industry: 1994*

Table A-15. Concentration of total, Federal, and company and other R&D funds and net sales of R&D-performing companies, by size of R&D program: 1984-94

Page 1 of 1

Companies ranked by size of R&D program	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Percent of total (company, Federal, and other) R&D funds											
First 4 (1-4).....	17%	18%	19%	19%	18%	19%	18%	16%	15%	17%	15%
Next 4 (5-8).....	13	12	11	12	12	13	13	8	8	7	8
Next 12 (9-20).....	17	17	14	16	17	16	15	12	13	13	14
Next 20 (21-40).....	13	13	13	12	12	12	12	11	11	12	13
Next 60 (41-100).....	18	16	15	14	15	15	16	15	15	16	15
Next 100 (101-200).....	9	9	10	8	8	8	9	12	12	8	9
Next 200 (201-400).....	6	5	8	6	7	6	7	6	6	7	7
Percent of Federal R&D funds											
First 4 (1-4).....	30	29	30	31	31	36	38	14	11	23	26
Next 4 (5-8).....	15	15	16	18	18	15	16	21	18	17	19
Next 12 (9-20).....	26	27	28	27	27	30	26	21	27	32	32
Next 20 (21-40).....	17	16	15	15	15	11	12	15	13	16	13
Next 60 (41-100).....	10	7	7	7	6	6	6	13	11	5	7
Next 100 (101-200).....	1	2	2	1	3	1	1	3	4	5	2
Next 200 (201-400).....	0	0	1	0	0	0	0	2	2	2	1
Percent of company and other (except Federal) R&D funds											
First 4 (1-4).....	22	23	20	20	21	22	21	17	17	17	16
Next 4 (5-8).....	8	7	7	7	7	7	7	7	8	7	7
Next 12 (9-20).....	12	12	12	12	12	13	12	10	12	12	12
Next 20 (21-40).....	12	12	10	11	12	12	13	10	11	11	11
Next 60 (41-100).....	18	18	16	16	16	16	17	16	17	14	14
Next 100 (101-200).....	11	10	10	10	10	10	10	15	14	9	9
Next 200 (201-400).....	7	7	8	8	8	8	8	7	7	8	8
Percent of net sales ranked by size of total R&D funds											
First 4 (1-4).....	7	8	8	7	7	6	8	7	8	8	8
Next 4 (5-8).....	4	4	5	5	5	5	4	3	3	3	2
Next 12 (9-20).....	5	5	5	5	5	5	5	4	4	4	5
Next 20 (21-40).....	8	8	7	7	6	5	5	4	4	4	5
Next 60 (41-100).....	12	12	10	11	11	12	12	12	12	11	10
Next 100 (101-200).....	13	13	10	8	9	8	9	9	9	8	8
Next 200 (201-400).....	14	15	9	12	10	11	12	11	11	10	10

NOTES: Companies were ranked individually for each year; therefore, particular companies comprising the size groups may have changed from year to year.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published.

These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-16. Domestic net sales of R&D-performing companies, by industry and size of company: 1993-94

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Industry	SIC code	Total	Size of company							
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees		
[Dollars in millions]										
1993										
Total.....		\$3,208,865	\$261,964	\$96,110	\$515,886	\$358,532	\$615,956	\$1,360,418		
Food, kindred, and tobacco products.....	20,21	288,510	13,247	9,364	50,755	35,076	46,628	133,440		
Textiles and apparel.....	22,23	51,202	7,488	(D)	13,695	4,414	12,344	(D)		
Lumber, wood products, and furniture.....	24,25	29,862	5,323	2,782	10,154	5,814	(D)	(D)		
Paper and allied products.....	26	110,244	3,996	3,739	14,298	9,379	30,505	48,326		
Chemicals and allied products.....	28	278,581	19,344	9,104	48,713	33,324	85,607	82,489		
Industrial chemicals.....	281-82,286	118,092	3,650	3,065	18,961	13,482	36,385	42,549		
Drugs and medicines.....	283	73,115	3,805	1,451	14,239	7,022	(D)	(D)		
Other chemicals.....	284-85,287-89	87,374	11,890	4,587	15,513	12,821	(D)	(D)		
Petroleum refining and extraction.....	13,29	238,345	2,423	639	21,220	11,509	93,318	109,236		
Rubber products.....	30	51,422	12,332	5,182	14,150	6,850	(D)	(D)		
Stone, clay, and glass products.....	32	35,168	3,923	(D)	6,919	5,656	13,454	(D)		
Primary metals.....	33	94,448	5,340	(D)	22,374	19,633	21,182	(D)		
Ferrous metals and products.....	331-32,3398-99	63,118	2,695	(D)	16,633	13,778	10,603	(D)		
Nonferrous metals and products.....	333-36	31,330	2,644	(D)	5,741	5,855	10,579	(D)		
Fabricated metal products.....	34	83,266	14,910	(D)	22,829	7,053	32,099	(D)		
Machinery.....	35	182,978	33,008	13,430	48,571	32,982	26,365	28,622		
Office, computing, and accounting machines.....	357	50,209	6,122	2,892	16,473	17,894	(D)	(D)		
Other machinery, except electrical.....	351-56,358-59	132,769	26,886	10,537	32,098	15,088	(D)	(D)		
Electrical equipment.....	36	215,494	20,176	9,928	38,116	10,369	29,586	107,317		
Radio and TV receiving equipment.....	365	2,165	(D)	(D)	1,308	0	0	0		
Communication equipment.....	366	38,973	5,136	1,486	8,780	0	(D)	(D)		
Electronic components.....	367	65,314	7,156	3,850	15,124	(D)	(D)	(D)		
Other electrical equipment.....	361-64,369	109,041	(D)	(D)	12,905	(D)	15,189	67,517		
Transportation equipment.....	37	426,245	7,551	3,402	38,684	27,112	37,816	311,681		
Motor vehicles and motor vehicles equipment.....	371	290,504	5,366	1,065	32,971	17,172	(D)	(D)		
Other transportation equipment.....	373-75,379	15,621	1,654	1,110	1,944	4,582	(D)	(D)		
Aircraft and missiles.....	372,376	120,121	531	1,227	3,769	5,358	12,365	96,871		

See explanatory information and SOURCE at end of table.

Table A-16. Domestic net sales of R&D-performing companies, by industry and size of company: 1993–94

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Industry	SIC code	Total	Size of company							
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees		
			[Dollars in millions]							
			1993							
Professional and scientific instruments.....	38	\$104,694	\$12,373	\$6,566	\$18,543	\$6,091	\$9,413	\$51,708		
Scientific and mechanical measuring instruments	381-82	49,572	6,022	(D)	7,326	2,778	(D)	22,958		
Optical, surgical, photographic, and other instruments.....	384-87	55,122	6,351	(D)	11,217	3,313	(D)	28,750		
Other manufacturing industries.....	27,31,39	60,525	11,089	(D)	13,358	10,247	15,296	(D)		
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	957,882	89,441	15,486	133,507	133,022	157,760	428,666		
			[Dollars in millions]							
			1994							
Total.....		3,595,278	343,987	116,833	582,384	400,872	706,139	1,445,062		
Food, kindred, and tobacco products.....	20,21	302,528	12,427	12,160	57,680	33,830	50,250	136,182		
Textiles and apparel.....	22,23	50,284	4,717	(D)	14,704	4,073	16,779	(D)		
Lumber, wood products, and furniture.....	24,25	32,193	4,914	2,415	10,781	7,403	(D)	(D)		
Paper and allied products.....	26	130,358	16,808	1,347	15,372	14,387	36,193	46,252		
Chemicals and allied products.....	28	322,039	29,423	9,511	52,769	39,391	93,368	97,576		
Industrial chemicals.....	281-82,286	143,233	16,804	5,885	18,970	11,137	39,004	51,432		
Drugs and medicines.....	283	94,328	3,444	(D)	15,713	10,589	32,310	(D)		
Other chemicals.....	284-85,287-89	84,477	9,176	(D)	18,086	17,664	22,055	(D)		
Petroleum refining and extraction.....	13,29	235,280	1,838	1,065	24,744	11,582	89,211	106,840		
Rubber products.....	30	62,223	19,289	3,553	16,366	6,213	(D)	(D)		
Stone, clay, and glass products.....	32	35,778	3,319	(D)	6,620	5,179	14,307	(D)		
Primary metals.....	33	116,624	7,668	8,839	22,381	30,748	18,662	28,326		
Ferrous metals and products.....	331-32,3398-99	69,915	5,058	1,793	13,679	21,328	(D)	(D)		
Nonferrous metals and products.....	333-36	46,710	2,611	7,046	8,702	9,420	(D)	(D)		

See explanatory information and SOURCE at end of table.

Table A-16. Domestic net sales of R&D-performing companies, by industry and size of company: 1993-94

Page 3 of 3

Industry	SIC code	Total	Size of company							
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees		
[Dollars in millions]										
1994										
Fabricated metal products.....	34	\$91,075	\$25,945	(D)	\$27,036	\$6,996	\$23,626	(D)		
Machinery.....	35	210,835	58,946	\$16,328	52,135	29,452	(D)	(D)		
Office, computing, and accounting machines....	357	51,709	9,123	3,072	17,521	10,489	(D)	(D)		
Other machinery, except electrical.....	351-56,358-59	159,126	49,823	13,256	34,614	18,964	(D)	(D)		
Electrical equipment.....	36	259,693	30,526	11,677	42,493	18,894	41,687	114,417		
Radio and TV receiving equipment.....	365	6,650	1,678	945	4,028	0	0	0		
Communication equipment.....	366	48,152	6,490	1,948	10,366	(D)	(D)	(D)		
Electronic components.....	367	80,312	11,852	4,472	15,803	(D)	(D)	(D)		
Other electrical equipment.....	361-64,369	124,579	10,505	4,312	12,296	5,110	21,986	70,370		
Transportation equipment.....	37	477,508	6,558	6,610	46,686	36,476	44,139	337,038		
Motor vehicles and motor vehicles equipment....	371	350,952	2,989	5,376	36,662	(D)	(D)	(D)		
Other transportation equipment.....	373-75,379	23,431	2,488	867	4,676	(D)	(D)	(D)		
Aircraft and missiles.....	372,376	103,125	1,081	367	5,348	4,729	8,176	83,424		
Professional and scientific instruments.....	38	124,541	19,365	7,270	19,472	9,331	5,607	63,496		
Scientific and mechanical measuring instruments.....	381-82	63,419	6,698	(D)	6,748	4,331	(D)	36,953		
Optical, surgical, photographic, and other instruments.....	384-87	61,121	12,667	(D)	12,724	5,000	(D)	26,543		
Other manufacturing industries.....	27,31,39	72,809	9,534	(D)	15,343	13,132	24,074	(D)		
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	1,071,511	92,712	22,765	157,803	133,784	202,089	462,359		

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-17. Total (company, Federal, and other) R&D funds as a percent of net sales in R&D-performing manufacturing companies, by industry and size of company: 1984-94

Page 1 of 2

Industry and size of company	SIC code	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Total.....		3.9%	4.4%	4.7%	4.6%	4.5%	4.3%	4.2%	4.2%	4.2%	3.8%	3.6%
Distribution by industry:												
Food, kindred, and tobacco products.....	20,21	(D)	(D)	(D)	0.6	(D)	(D)	(D)	0.5	0.5	0.5	0.5
Textiles and apparel.....	22,23	(D)	0.6	(D)	(D)	(D)						
Lumber, wood products, and furniture.....	24,25	0.7	0.8	0.6	0.6	(D)	0.6	0.6	(D)	(D)	(D)	(D)
Paper and allied products.....	26	(D)	(D)	(D)	(D)	(D)	0.8	1.0	1.1	(D)	(D)	(D)
Chemicals and allied products.....	28	4.7	5.0	5.2	5.3	5.3	5.4	5.3	5.4	5.5	(D)	(D)
Industrial chemicals.....	281-82,286	4.0	4.4	4.6	4.7	4.4	4.2	4.5	4.6	4.6	(D)	(D)
Drugs and medicines.....	283	(D)	(D)	8.5	(D)	8.8	(D)	(D)	8.9	9.6	12.5	10.2
Other chemicals.....	284-85,287-89	(D)	(D)	3.3	(D)	3.4	(D)	(D)	3.1	2.7	(D)	(D)
Petroleum refining and extraction.....	13,29	(D)	(D)	(D)	1.0	1.0	0.9	0.9	1.0	0.9	0.9	0.8
Rubber products.....	30	(D)										
Stone, clay, and glass products.....	32	(D)	(D)	2.5	2.6	(D)	(D)	(D)	(D)	(D)	1.5	1.7
Primary metals.....	33	(D)	(D)	(D)	0.9	0.8	0.8	0.8	0.8	0.6	0.7	0.6
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	(D)	(D)	0.5	(D)	(D)	(D)	(D)	0.5	(D)
Nonferrous metals and products.....	333-36	1.2	1.4	1.5	(D)	1.0	(D)	(D)	(D)	(D)	1.2	(D)
Fabricated metal products.....	34	1.5	1.5	1.5	1.5	1.3	1.5	1.4	1.5	1.5	1.4	1.2
Machinery.....	35	6.4	7.6	(D)	(D)	7.7	7.9	7.7	8.1	7.8	4.6	3.8
Office, computing, and accounting machines.....	357	(D)	9.9	7.9								
Other machinery, except electrical.....	351-56,358-59	(D)	(D)	3.0	3.0	2.9	(D)	(D)	(D)	(D)	2.6	2.5
Electrical equipment.....	36	6.8	7.6	7.9	8.2	7.5	7.3	6.5	6.5	5.6	6.2	5.9
Radio and TV receiving equipment.....	365	(D)	(D)	3.6	3.2	2.4	1.8	1.6	(D)	(D)	(D)	(D)
Communication equipment.....	366	9.8	10.1	9.9	10.2	10.7	11.6	10.0	(D)	(D)	(D)	(D)
Electronic components.....	367	7.8	9.6	(D)	10.0	9.0	(D)	8.3	7.9	7.5	8.1	7.5
Other electrical equipment.....	361-64,369	(D)	(D)	(D)	2.7	2.5	(D)	3.7	(D)	(D)	(D)	(D)
Transportation equipment.....	37	(D)	(D)	8.3	8.7	8.9	8.1	7.5	7.3	7.1	6.4	5.9
Motor vehicles and motor vehicles equipment.....	371	3.4	3.8	(D)								
Other transportation equipment.....	373-75,379	(D)										
Aircraft and missiles.....	372,376	15.4	14.9	13.4	14.7	16.3	13.5	11.8	12.1	11.8	12.5	13.8

See explanatory information and SOURCE at end of table.

Table A-17. Total (company, Federal, and other) R&D funds as a percent of net sales in R&D-performing manufacturing companies, by industry and size of company: 1984-94

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Industry and size of company	SIC code	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Professional and scientific instruments	38	8.3%	8.9%	8.8%	7.9%	7.4%	7.2%	8.0%	9.1%	9.4%	9.7%	9.2%
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	(D)	(D)	7.9	7.4	8.6	10.0	10.6	11.5	11.0
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	(D)	(D)	7.3	7.3	7.7	8.1	8.3	8.1	7.3
Other manufacturing industries.....	27,31,39	(D)	(D)	1.2	(D)							
Distribution by size of company: [Number of employees]												
Total.....		3.9	4.4	4.7	4.6	4.5	4.3	4.2	4.2	4.2	3.8	3.6
Fewer than 500		2.9	3.6	4.1	3.9	3.7	3.6	3.4	3.3	3.4	3.7	2.6
500 to 999		2.3	2.4	2.4	2.3	1.8	1.8	1.9	2.5	2.8	2.9	2.6
1,000 to 4,999.....		2.2	2.6	2.5	2.6	2.4	2.2	2.0	2.5	2.8	2.6	2.6
5,000 to 9,999.....		1.8	1.9	2.3	2.3	2.3	2.6	2.9	3.0	2.9	2.9	2.2
10,000 to 24,999.....		3.1	3.1	3.2	3.1	3.1	2.8	2.7	3.6	3.2	2.9	2.7
25,000 or more.....		5.3	6.2	6.5	6.6	6.3	5.8	5.6	5.6	5.6	5.2	5.2

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

NOTE: As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-18. Company and other (except Federal) R&D funds as a percent of net sales in R&D-performing manufacturing companies, by industry and size of company: 1984-94

Industry and size of company	SIC code	[In percent]										Page 1 of 2
		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	
Total.....		2.6%	3.0%	3.2%	3.1%	3.1%	3.1%	3.1%	3.2%	3.3%	3.1%	2.9%
Distribution by industry:												
Food, kindred, and tobacco products.....	20,21	0.4	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Textiles and apparel.....	22,23	0.5	0.5	0.5	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.6
Lumber, wood products, and furniture.....	24,25	0.7	0.8	0.6	0.6	0.6	0.6	0.6	0.9	0.9	0.7	0.6
Paper and allied products.....	26	0.8	0.8	0.7	0.6	0.8	0.8	1.0	1.1	1.0	1.1	1.0
Chemicals and allied products.....	28	4.6	4.9	5.1	5.2	5.2	5.4	5.3	5.3	5.4	6.0	5.1
Industrial chemicals.....	281-82,286	3.8	4.2	4.4	4.4	4.2	4.1	4.4	4.4	4.4	4.4	3.3
Drugs and medicines.....	283	8.2	8.0	8.4	8.7	8.8	8.9	8.8	8.9	9.6	12.5	10.2
Other chemicals.....	284-85,287-89	2.9	3.1	3.3	3.3	3.4	3.9	3.4	3.0	2.7	2.7	2.5
Petroleum refining and extraction.....	13,29	0.7	0.9	1.1	1.0	1.0	0.9	0.9	1.0	0.9	0.9	0.8
Rubber products.....	30	1.9	1.8	1.7	1.6	1.7	1.9	2.1	2.3	2.3	2.1	2.3
Stone, clay, and glass products.....	32	1.9	2.3	2.4	2.5	2.0	1.8	1.7	1.6	1.6	1.5	1.5
Primary metals.....	33	0.9	0.9	1.0	0.9	0.7	0.7	0.8	0.8	0.6	0.7	0.6
Ferrous metals and products.....	331-32,3398-99	0.6	0.5	0.7	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.3
Nonferrous metals and products.....	333-36	1.2	1.4	1.5	1.3	1.0	1.0	1.2	1.2	0.7	1.2	0.9
Fabricated metal products.....	34	1.4	1.4	1.4	1.2	1.1	1.2	1.1	1.2	1.1	1.1	1.0
Machinery.....	35	5.8	6.7	7.3	7.1	6.8	7.3	7.2	7.5	7.3	4.5	3.8
Office, computing, and accounting machines.....	357	10.5	12.4	12.4	12.3	11.2	13.1	14.4	14.9	13.7	9.8	7.9
Other machinery, except electrical.....	351-56,358-59	2.5	2.6	2.9	3.0	2.8	2.6	2.3	2.9	2.9	2.5	2.5
Electrical equipment.....	36	4.5	4.8	5.1	5.4	5.3	5.2	4.5	4.3	4.0	5.4	5.2
Radio and TV receiving equipment.....	365	3.7	4.3	3.6	3.2	2.4	1.8	1.6	1.0	0.6	4.0	1.0
Communication equipment.....	366	5.1	5.4	5.2	5.5	6.1	6.8	6.1	6.1	7.0	10.1	10.3
Electronic components.....	367	6.6	8.2	9.2	8.5	8.0	7.7	7.4	7.2	7.0	7.8	7.3
Other electrical equipment.....	361-64,369	2.2	2.0	2.2	2.6	2.3	2.3	2.2	2.2	2.1	2.3	2.1
Transportation equipment.....	37	3.3	3.4	3.6	3.4	3.5	3.5	3.4	4.0	4.2	3.9	3.7
Motor vehicles and motor vehicles equipment.....	371	3.0	3.1	3.3	3.4	3.4	3.7	3.7	4.1	4.0	3.7	3.4
Other transportation equipment.....	373-75,379	2.0	2.3	2.7	2.5	2.6	2.5	2.1	2.1	2.1	1.9	1.2
Aircraft and missiles.....	372,376	4.0	3.9	4.0	3.6	3.9	3.3	3.1	4.0	4.7	4.7	5.3

See explanatory information and SOURCE at end of table.

Table A-18. Company and other (except Federal) R&D funds as a percent of net sales in R&D-performing manufacturing companies, by industry and size of company: 1984-94

Page 2 of 2

Industry and size of company	SIC code	[In percent]										
		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Professional and scientific instruments.....	38	7.6%	8.3%	8.2%	7.5%	7.1%	6.8%	7.1%	7.1%	7.2%	7.2%	6.5%
Scientific and mechanical measuring instruments.....	381-82	8.3	8.4	8.4	8.1	7.6	6.9	6.9	6.3	6.2	6.4	5.8
Optical, surgical, photographic, and other instruments.....	384-87	7.3	8.1	8.0	7.2	7.1	7.1	7.5	8.0	8.2	7.9	7.2
Other manufacturing industries.....	27,31,39	1.1	1.0	1.2	1.1	1.0	0.9	0.9	0.8	1.3	1.3	1.1
Distribution by size of company: [Number of employees]												
Total.....		2.6	3.0	3.2	3.1	3.1	3.1	3.1	3.2	0.0	0.0	0.0
Fewer than 500		2.8	3.4	4.0	3.8	3.7	3.5	3.3	3.2	3.2	3.6	2.5
500 to 999		2.2	2.2	2.2	2.2	1.7	1.7	1.7	2.4	2.7	2.7	2.5
1,000 to 4,999.....		2.0	2.4	2.4	2.4	2.3	2.1	1.9	2.4	2.7	2.5	2.5
5,000 to 9,999.....		1.6	1.8	2.0	2.0	2.0	2.1	2.8	2.9	2.8	2.8	2.2
10,000 to 24,999.....		2.5	2.5	2.6	2.5	2.6	2.5	2.5	3.0	2.6	2.5	2.5
25,000 or more.....		3.2	3.5	3.7	3.8	3.7	3.7	3.6	3.8	4.0	3.7	3.6

NOTE: As a result of a new sample design, statistics for 1988-91 have been revised since originally published.

These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-19. Total (company, Federal, and other) R&D funds as a percent of net sales in R&D-performing manufacturing companies, by industry and ranked by size of R&D program: 1994

Page 1 of 1

Industry	SIC code	Total R&D funds as a percent of net sales [Percent]			Total R&D funds [Dollars in millions]		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
Total.....		6.4%	16.5%	8.9%	\$18,293	\$9,199	\$16,452
Food, kindred, and tobacco products.....	20,21	1.0	0.5	0.4	595	203	248
Textiles and apparel.....	22,23	0.9	1.2	0.6	108	50	66
Lumber, wood products, and furniture.....	24,25	1.1	1.1	1.0	76	31	30
Paper and allied products.....	26	2.6	1.1	0.5	883	139	151
Chemicals and allied products.....	28	7.4	7.2	6.1	7,823	3,108	4,388
Industrial chemicals.....	281-82,286	7.5	6.0	3.2	3,339	898	1,085
Drugs and medicines.....	283	10.6	10.0	13.5	3,238	1,982	2,996
Other chemicals.....	284-85,287-89	3.9	2.8	2.0	1,246	228	307
Petroleum refining and extraction.....	13,29	1.4	1.0	0.3	1,155	477	245
Rubber products.....	30	5.6	1.6	2.7	546	149	151
Stone, clay, and glass products.....	32	2.0	2.7	1.2	280	96	110
Primary metals.....	33	0.7	0.7	0.5	303	97	115
Ferrous metals and products.....	331-32,3398-99	0.3	0.8	0.6	89	43	67
Nonferrous metals and products.....	333-36	1.6	0.5	0.4	214	54	49
Fabricated metal products.....	34	5.2	1.0	1.3	360	125	154
Machinery.....	35	7.3	6.0	6.3	2,475	1,125	1,594
Office, computing, and accounting machines	357	11.4	8.4	10.1	1,443	750	1,120
Other machinery, except electrical.....	351-56,358-59	4.8	3.8	3.4	1,032	375	474
Electrical equipment.....	36	7.7	6.5	4.5	9,962	1,261	1,570
Radio and TV receiving equipment.....	365	0.8	1.7	2.2	29	10	17
Communication equipment.....	366	16.1	11.7	9.9	(D)	421	552
Electronic components.....	367	10.1	9.4	6.3	3,508	610	711
Other electrical equipment.....	361-64,369	3.3	2.5	1.7	(D)	220	290
Transportation equipment.....	37	6.9	7.7	4.2	20,937	5,236	1,582
Motor vehicles and motor vehicles equipment.....	371	5.1	1.1	1.1	12,484	279	217
Other transportation equipment.....	373-75,379	5.4	0.8	0.5	582	32	25
Aircraft and missiles.....	372,376	17.8	12.6	9.7	7,871	4,924	1,340
Professional and scientific instruments.....	38	11.1	12.3	8.0	6,761	1,304	1,136
Scientific and mechanical measuring instruments.....	381-82	12.9	13.7	7.7	4,272	933	617
Optical, surgical, photographic, and other instruments.....	384-87	9.0	9.7	8.5	2,489	371	519
Other manufacturing industries.....	27,31,39	3.5	2.2	0.6	230	80	111

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

NOTES: Rankings were based on total (company, Federal, and other) R&D funds.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published.

These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-20. Company and other (except Federal) R&D funds as a percent of net sales in R&D-performing manufacturing companies, by industry and ranked by size of company-financed R&D program: 1994

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Industry	SIC code	Company and other R&D funds as a percent of net sales [Percent]			Company and other R&D funds [Dollars in millions]		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
Total.....		5.6%	7.5%	7.4%	\$15,967	\$7,251	\$11,201
Food, kindred, and tobacco products.....	20,21	1.0	0.5	0.4	595	203	248
Textiles and apparel.....	22,23	2.1	0.4	0.6	98	48 (S)	66
Lumber, wood products, and furniture.....	24,25	1.1	1.1	1.0	76	31	29
Paper and allied products.....	26	2.4	1.1	0.5	842	139	151
Chemicals and allied products.....	28	6.6	6.2	6.1	6,881	2,860	4,331
Industrial chemicals.....	281-82,286	5.7	3.4	3.2	2,397	667	1,034
Drugs and medicines.....	283	10.6	10.0	13.5	3,238	1,982	2,994
Other chemicals.....	284-85,287-89	3.9	3.2	1.8	1,246	211	303
Petroleum refining and extraction.....	13,29	1.4	0.9	0.3	1,148	477	243
Rubber products.....	30	3.9	2.0	2.7	490	131	151
Stone, clay, and glass products.....	32	2.0	1.7	1.5	279	94	108
Primary metals.....	33	0.7	0.7	0.5	292	97	110
Ferrous metals and products.....	331-32,3398-99	0.3	0.8	0.6	89	43	61
Nonferrous metals and products.....	333-36	1.5	0.5	0.4	203	54	49
Fabricated metal products.....	34	2.0	0.7	1.7	207	88	117
Machinery.....	35	7.2	5.9	6.6	2,449	1,110	1,580
Office, computing, and accounting machines.....	357	11.4	8.4	10.0	1,438	750	1,107
Other machinery, except electrical.....	351-56,358-59	4.7	3.6	3.6	1,011	360	473
Electrical equipment.....	36	6.8	4.9	4.4	8,320	1,177	1,566
Radio and TV receiving equipment.....	365	0.8	1.7	2.2	29	10	16
Communication equipment.....	366	12.1	11.7	9.9	3,270 (S)	421	552
Electronic components.....	367	12.0	4.8	5.7	3,482	526	708
Other electrical equipment.....	361-64,369	2.4	2.5	1.7	1,538	220	290
Transportation equipment.....	37	5.0	1.8	2.2	15,517	1,062	819
Motor vehicles and motor vehicles equipment.....	371	4.6	1.1	1.1	11,299	279	202
Other transportation equipment.....	373-75,379	1.7	0.8	0.5	187	32	25
Aircraft and missiles.....	372,376	7.5	2.5	4.2	4,031	750	591
Professional and scientific instruments.....	38	6.9	8.0	6.9	4,065	913	1,044
Scientific and mechanical measuring instruments.....	381-82	5.3	7.2	5.9	1,662	549	527
Optical, surgical, photographic, and other instruments.....	384-87	8.7	9.5	8.5	2,403	364	517
Other manufacturing industries.....	27,31,39	3.5	2.2	0.6	229	80	111

KEY: (S) = Indicates imputation of more than 50 percent.

NOTES: Rankings were based on total (company, Federal, and other) R&D funds.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published.

These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-21. Federal R&D funds as a percent of net sales in R&D-performing manufacturing companies, by industry and ranked by size of federally financed R&D program: 1994

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Industry	SIC code	Federal R&D funds as a percent of net sales [Percent]			Federal R&D funds [Dollars in millions]		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
Total.....		21.1%	2.1%	5.2%	\$5,939	\$4,377	\$7,155
Food, kindred, and tobacco products.....	20,21	0.0	0.0	0.0	0	0	0
Textiles and apparel.....	22,23	0.2	0.0	0.0	(D)	0	0
Lumber, wood products, and furniture.....	24,25	6.4	0.0	0.0	(D)	0	0
Paper and allied products.....	26	0.2	0.0	0.0	(D)	0	0
Chemicals and allied products.....	28	3.0	0.1	0.0	(D)	15	4
Industrial chemicals.....	281-82,286	3.5	0.1	0.0	(D)	11	4 (S)
Drugs and medicines.....	283	0.2	0.1	0.0	4	4	0
Other chemicals.....	284-85,287-89	0.4	0.0	0.0	(D)	0	0
Petroleum refining and extraction.....	13,29	0.0	0.0	0.0	10	0	0
Rubber products.....	30	4.4	0.0	0.0	(D)	0	0
Stone, clay, and glass products.....	32	0.1	1.9	0.0	7	31	0
Primary metals.....	33	0.1	0.0	0.0	17	0	0
Ferrous metals and products.....	331-32,3398-99	0.1	0.0	0.0	(D)	0	0
Nonferrous metals and products.....	333-36	0.1	0.0	0.0	(D)	0	0
Fabricated metal products.....	34	4.5	0.4	0.1	216	24	2
Machinery.....	35	0.2	0.2	4.6	56	15	28
Office, computing, and accounting machines.....	357	0.4	0.2	2.1	19	5	3
Other machinery, except electrical.....	351-56,358-59	0.2	0.3	5.5	37	10	24
Electrical equipment.....	36	2.2	0.5	0.2	1,771	17	13
Radio and TV receiving equipment.....	365	1.4	0.0	0.0	(D)	0	0
Communication equipment.....	366	6.9	1.4	1.4	(D)	(D)	1
Electronic components.....	367	1.4	1.7	0.8	(D)	(D)	8
Other electrical equipment.....	361-64,369	0.9	0.1	0.1	(D)	4	4
Transportation equipment.....	37	2.9	6.0	3.5	6,906	2,835	651
Motor vehicles and motor vehicles equipment.....	371	0.6	0.0	0.0	(D)	0	0
Other transportation equipment.....	373-75,379	5.8	0.0	0.0	(D)	0	0
Aircraft and missiles.....	372,376	16.8	6.1	3.5	5,308	2,835	651
Professional and scientific instruments....	38	7.0	2.2	2.5	2,981	206	160
Scientific and mechanical measuring instruments.....	381-82	9.4	2.2	2.6	2,877	195	156
Optical, surgical, photographic, and other instruments.....	384-87	0.9	2.1	0.8	105	10	3
Other manufacturing industries.....	27,31,39	0.0	0.0	0.0	(D)	0	0

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-22. Total (company, Federal, and other) funds for performance of basic research, applied research, and development, in current and constant dollars: 1953–94

Page 1 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1987 dollars	Current dollars	Constant 1987 dollars	Current dollars	Constant 1987 dollars	Current dollars	Constant 1987 dollars
	[Dollars in millions]							
1953 1/.....	\$3,630	\$16,500	\$151	\$686	\$726	\$3,300	\$2,753	\$12,514
1954 1/.....	4,070	18,333	166	748	814	3,667	3,090	13,919
1955 1/.....	4,640	19,414	189	791	928	3,883	3,523	14,741
1956.....	6,605	27,987	253	1,072	1,268	5,373	5,084	21,542
1957.....	7,731	31,684	271	1,111	1,670	6,844	5,790	23,730
1958.....	8,389	33,691	295	1,185	1,911	7,675	6,183	24,831
1959.....	9,618	37,570	320	1,250	1,991	7,777	7,307	28,543
1960.....	10,509	40,419	376	1,446	2,029	7,804	8,104	31,169
1961.....	10,908	41,475	395	1,502	1,977	7,517	8,536	32,456
1962.....	11,464	42,617	488	1,814	2,449	9,104	8,527	31,699
1963.....	12,630	46,434	522	1,919	2,457	9,033	9,651	35,482
1964.....	13,512	48,780	549	1,982	2,600	9,386	10,363	37,412
1965.....	14,185	49,947	592	2,085	2,658	9,359	10,935	38,504
1966.....	15,548	52,884	624	2,122	2,843	9,670	12,081	41,092
1967.....	16,385	54,076	629	2,076	2,915	9,620	12,841	42,380
1968.....	17,429	54,808	642	2,019	3,124	9,824	13,663	42,965
1969.....	18,308	54,814	618	1,850	3,287	9,841	14,403	43,123
1970.....	18,067	51,327	602	1,710	3,427	9,736	14,038	39,881
1971.....	18,320	49,380	590	1,590	3,415	9,205	14,315	38,585
1972.....	19,552	50,392	593	1,528	3,514	9,057	15,445	39,807
1973.....	21,249	51,450	631	1,528	3,825	9,262	16,793	40,661
1974.....	22,887	50,973	699	1,557	4,288	9,550	17,900	39,866
1975.....	24,187	49,161	730	1,484	4,570	9,289	18,887	38,388
1976.....	26,997	51,620	819	1,566	5,112	9,774	21,066	40,279
1977.....	29,825	53,354	911	1,630	5,636	10,082	23,278	41,642
1978 1/.....	33,304	55,231	1,035	1,716	6,300	10,448	25,969	43,066
1979.....	38,226	58,271	1,158	1,765	7,225	11,014	29,843	45,492
1980 1/.....	44,505	62,071	1,325	1,848	8,450	11,785	34,730	48,438
1981.....	51,810	65,665	1,614	2,046	10,699	13,560	39,497	50,060
1982 1/.....	58,650	69,988	1,904	2,272	12,323	14,705	44,423	53,011
1983.....	65,268	74,849	2,223	2,549	13,927	15,971	49,118	56,328
1984.....	74,800	82,198	2,608	2,866	15,765	17,324	56,427	62,008
1985.....	84,239	89,236	2,862	3,032	18,255	19,338	63,122	66,867
1986.....	87,823	90,633	4,047	4,176	19,759	20,391	64,017	66,065
1987.....	92,155	92,155	4,324	4,324	19,813	19,813	68,018	68,018
1988.....	97,015	93,373	4,500	4,331	20,748	19,969	71,767	69,073
1989.....	102,055	94,060	5,216	4,807	22,691	20,913	74,148	68,339

See explanatory information and SOURCE on next page.

Table A-22. Total (company, Federal, and other) funds for performance of basic research, applied research, and development, in current and constant dollars: 1953-94

Page 2 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1987 dollars	Current dollars	Constant 1987 dollars	Current dollars	Constant 1987 dollars	Current dollars	Constant 1987 dollars
	[Dollars in millions]							
1990.....	\$109,727	\$96,846	\$5,128	\$4,526	\$24,785	\$21,876	\$79,814	\$70,445
1991.....	116,952	99,449	7,837	6,664	27,446	23,338	81,669	69,446
1992.....	119,110	98,519	7,002	5,792	26,168	21,644	85,940	71,084
1993.....	117,400	95,061	6,919	5,602	24,686	19,989	85,796	69,470
1994.....	119,595	94,841	7,017	5,565	23,490	18,628	89,088	70,649

1/ Character-of-work estimates were made by the National Science Foundation. See: National Science Foundation, *National Patterns of R&D Resources: 1994*, Final Report, NSF 95-304.

NOTES: The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

The 1987 GNP implicit price deflators were used to convert current dollars to constant dollars.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-23. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1992

Page 1 of 2

Distribution by industry	SIC code	Total			Basic			Applied			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
Total.....		\$119,110	\$24,722	\$94,388	\$7,002	\$1,186	\$5,816	\$26,168	\$4,983	\$21,184	\$85,940	\$18,555	\$67,385
Food, kindred, and tobacco products....	20,21	1,386	0	1,386	132	0	132	454	0	454	800	0	800
Textiles and apparel.....	22,23	(D)	(D)	261	33	0	33	(D)	(D)	35	202	10	192
Lumber, wood products, and furniture.....	24,25	(D)	(D)	234	(D)	(D)	17	83	0	83	(D)	(D)	134
Paper and allied products.....	26	(D)	(D)	1,182	(D)	0	(D)	(D)	(D)	(D)	493	0	493
Chemicals and allied products.....	28	15,381	(S)	15,091	(D)	(D)	1,978	5,052	17	5,035	(D)	(D)	8,078
Industrial chemicals.....	281-82,286	5,165	(S)	4,911	(D)	(D)	529	1,165	14	1,151	(D)	(D)	3,231
Drugs and medicines.....	283	7,944	(S)	7,934	(D)	(D)	1,319	(D)	(D)	3,057	(D)	(D)	3,558
Other chemicals.....	284-85,287-89	2,272	(S)	2,246	(D)	(D)	130	(D)	(D)	827	(D)	(D)	1,289
Petroleum refining and extraction.....	13,29	2,277	9	2,268	(D)	(D)	(D)	1,051	0	1,051	(D)	(D)	(D)
Rubber products.....	30	(D)	(D)	1,256	76	0	76	195	0	195	(D)	(D)	985
Stone, clay, and glass products.....	32	(D)	(D)	479	(D)	(D)	40	(D)	(D)	175	(D)	(D)	263
Primary metals.....	33	522	(S)	514	(D)	(D)	30	(D)	(D)	220	264	2	262
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	221	(D)	(D)	(D)	(D)	0	(D)	(D)	(D)	115
Nonferrous metals and products.....	333-36	(D)	(D)	293	(D)	0	(D)	(D)	(D)	(D)	(D)	(D)	148
Fabricated metal products.....	34	1,017	294	723	(D)	(D)	54	(D)	(D)	156	803	290	513
Machinery.....	35	14,938	1,035	13,903	(D)	(D)	711	(D)	(D)	1,848	11,932	586	11,347
Office, computing, and accounting machines.....	357	(D)	(D)	10,614	(D)	(D)	(D)	(D)	(D)	1,029	(D)	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	(D)	(D)	3,289	(D)	(D)	(D)	844	25	819	(D)	(D)	(D)
Electrical equipment.....	36	13,360	3,844	9,516	(D)	(D)	313	(D)	(D)	2,676	9,311	2,783	6,527
Radio and TV receiving equipment.....	365	(D)	(D)	93	(D)	(D)	(D)	8	0	8	(D)	(D)	(D)
Communication equipment.....	366	(D)	(D)	3,381	(D)	(D)	(D)	(D)	(D)	819	(D)	(D)	(D)
Electronic components.....	367	3,567	247	3,320	(D)	(D)	110	(D)	(D)	813	2,578	181	2,397
Other electrical equipment.....	361-64,369	(D)	(D)	2,722	(D)	(D)	138	(D)	(D)	1,035	(D)	(D)	1,548
Transportation equipment.....	37	27,494	11,202	16,292	(D)	(D)	124	(D)	(D)	1,228	24,869	9,928	14,941
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	9,132	62	0	62	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	289	(D)	(D)	26	(D)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	17,158	(S)	6,871	270	235	35	1,739	976	763	15,148	9,076	6,072

See explanatory information and SOURCE at end of table.

Table A-23. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1992

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Distribution by industry	SIC code	Total			Basic			Applied			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
Professional and scientific instruments	38	\$9,542	\$2,221	\$7,321	(D)	(D)	\$477	(D)	(D)	\$1,979	\$6,711	\$1,847	\$4,864
Scientific and mechanical measuring instruments.....	381-82	5,156	2,143	3,013	(D)	(D)	150	(D)	(D)	1,048	3,602	1,788	1,815
Optical, surgical, photographic, and other instruments.....	384-87	4,386	78	4,308	(D)	(D)	327	(D)	(D)	931	3,109	59	3,050
Other manufacturing industries.....	27,31,39	660	61	599	\$79	\$0	79	(D)	(D)	100	(D)	(D)	420
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	28,933	5,570	23,363	2,270	894	1,376	\$7,369	\$1,933	5,436	19,294	2,743	16,551

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KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NOTE: The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-24. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1993

Page 1 of 2

Distribution by industry	SIC code	Total			Basic			Applied			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
Total.....		\$117,400	\$22,809	\$94,591	\$6,919	\$958	\$5,961	\$24,686	\$4,730	\$19,956	\$85,796	\$17,118	\$68,678
Food, kindred, and tobacco products.....	20,21	1,345	0	1,345	96	0	96	434	0	434	814	0	814
Textiles and apparel.....	22,23	(D)	(D)	286	(D)	(D)	44	(D)	(D)	34	(D)	(D)	208
Lumber, wood products, and furniture.....	24,25	(D)	(D)	196	(D)	(D)	15	48	0	48	(D)	(D)	133
Paper and allied products.....	26	(D)	(D)	1,191	(D)	(D)	197	(D)	(D)	537	459	0	459
Chemicals and allied products.....	28	(D)	(D)	16,658	2,276	12	2,264	(D)	(D)	5,810	(D)	(D)	8,584
Industrial chemicals.....	281-82,286	(D)	(D)	5,165	(D)	(D)	918	(D)	(D)	1,266	(D)	(D)	2,981
Drugs and medicines.....	283	9,146	15	9,132	(D)	(D)	(D)	3,768	8	3,760	(D)	(D)	(D)
Other chemicals.....	284-85,287-89	(D)	(D)	2,361	(D)	(D)	(D)	(D)	(D)	783	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	2,152	14	2,138	(D)	(D)	(D)	(D)	(D)	(D)	1,084	11	1,073
Rubber products.....	30	(D)	(D)	1,059	29	0	29	(D)	(D)	160	(D)	(D)	870
Stone, clay, and glass products.....	32	538	9	529	(D)	(D)	54	(D)	(D)	180	302	7	295
Primary metals.....	33	669	23	646	(D)	(D)	47	217	6 (S)	211	(D)	(D)	388
Ferrous metals and products.....	331-32,3398-99	289	17	272	(D)	(D)	21	(D)	(D)	86	(D)	(D)	165
Nonferrous metals and products.....	333-36	380	6	374	25	0	25	(D)	(D)	125 (S)	(D)	(D)	223
Fabricated metal products.....	34	1,158	222	936	(D)	(D)	96	189	8	182	(D)	(D)	659
Machinery.....	35	8,381	86	8,295	(D)	(D)	283	(D)	(D)	1,616	6,461	65	6,396
Office, computing, and accounting machines.....	357	4,950	33	4,917	(D)	(D)	92	(D)	(D)	950	3,903	28	3,875
Other machinery, except electrical.....	351-56,358-59	3,431	53	3,378	(D)	(D)	191	(D)	(D)	666	2,557	37	2,521
Electrical equipment.....	36	13,349	1,667	11,682	(D)	(D)	364	(D)	(D)	2,904	9,819	1,403	8,422
Radio and TV receiving equipment.....	365	(D)	(D)	87	10	0	10	(D)	(D)	12	(D)	(D)	64
Communication equipment.....	366	(D)	(D)	3,954	(D)	(D)	(D)	576	0	576	(D)	(D)	(D)
Electronic components.....	367	5,311	206	5,105	(D)	1	(D)	1,429	35 (S)	1,394	(D)	170	(D)
Other electrical equipment.....	361-64,369	(D)	(D)	2,537	(D)	(D)	113	(D)	(D)	919	(D)	(D)	1,504
Transportation equipment.....	37	27,258	10,617	16,640	(D)	(D)	136	2,008	905	1,103	(D)	(D)	15,401
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	10,659	(D)	(D)	74	(D)	(D)	462	(D)	(D)	10,123
Other transportation equipment.....	373-75,379	(D)	(D)	297	(D)	0	(D)	(D)	(D)	12	(D)	(D)	(D)
Aircraft and missiles.....	372,376	15,056	9,372	5,684	(D)	(D)	(D)	1,453	825	628	(D)	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-24. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1993

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Distribution by industry	SIC code	Total			Basic			Applied			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
Professional and scientific instruments.....	38	\$10,119	\$2,577	\$7,542	(D)	(D)	\$402	\$2,093	\$297	\$1,796	(D)	(D)	\$5,344
Scientific and mechanical measuring instruments.....	381-82	5,681	2,484	3,196	(D)	(D)	136	1,405	276	1,129	(D)	(D)	1,933
Optical, surgical, photographic, and other instruments.....	384-87	4,438	92	4,346	(D)	(D)	267	689	21	668	(D)	(D)	3,411
Other manufacturing industries.....	27,31,39	(D)	(D)	758	(D)	(D)	147	84	0	84	(D)	(D)	527
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	30,831	6,140	24,690	\$2,282	\$670	1,612	6,502	2,534	3,967	\$22,047	\$2,935	19,112

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NOTE: The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-25. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1994

Page 1 of 2

Distribution by industry	SIC code	Total			Basic			Applied			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
Total.....		\$119,595	\$22,463	\$97,131	\$7,017	\$939	\$6,078	\$23,490	\$4,119	\$19,372	\$89,088	\$17,405	\$71,683
Food, kindred, and tobacco products.....	20,21	1,476	0	1,476	114	0	114	473	0	473	889	0	889
Textiles and apparel.....	22,23	(D)	(D)	316	(D)	(D)	42	(D)	(D)	47	(D)	(D)	228
Lumber, wood products, and furniture.....	24,25	(D)	(D)	201	(D)	(D)	27	(D)	(D)	43	(D)	(D)	131
Paper and allied products.....	26	(D)	(D)	1,263	(D)	(D)	211	(D)	(D)	619	433	0	433
Chemicals and allied products.....	28	(D)	(D)	16,559	2,608	9	2,599	(D)	(D)	5,386	9,186	610	8,575
Industrial chemicals.....	281-82,286	(D)	(D)	4,780	(D)	(D)	1,066	(D)	(D)	(D)	(D)	(D)	(D)
Drugs and medicines.....	283	9,633	8	9,625	(D)	1	(D)	3,333	5	3,328	(D)	2	(D)
Other chemicals.....	284-85,287-89	(D)	(D)	2,154	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	1,950	10	1,939	(D)	0	(D)	694	5	688	(D)	5	(D)
Rubber products.....	30	(D)	(D)	1,432	33	0	33	(D)	(D)	215	1,184	0	1,184
Stone, clay, and glass products.....	32	591	38	553	50	0	50	212	37	175	329	1	328
Primary metals.....	33	690	17	672	(D)	(D)	102	(D)	(D)	206	(D)	(D)	364
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	241	(D)	(D)	19	(D)	(D)	84	(D)	(D)	138
Nonferrous metals and products.....	333-36	(D)	(D)	431	83	0	83	(D)	(D)	122	(D)	(D)	226
Fabricated metal products.....	34	1,111	243	868	(D)	(D)	78	(D)	(D)	184	833	226	606
Machinery.....	35	8,110	99	8,011	261	7	254	1,464	35	1,429	6,385	56	6,328
Office, computing, and accounting machines.....	357	4,106	28	4,078	(D)	(D)	62	(D)	(D)	713	3,316	13	3,303
Other machinery, except electrical.....	351-56,358-59	4,004	71	3,933	(D)	(D)	192	(D)	(D)	716	3,068	43	3,025
Electrical equipment.....	36	15,338	1,801	13,537	(D)	(D)	388	(D)	(D)	2,597	12,203	1,653 (S)	10,550
Radio and TV receiving equipment.....	365	(D)	(D)	64	(D)	(D)	(D)	0	(D)	36	1	35	
Communication equipment.....	366	(D)	(D)	4,939	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	4,111
Electronic components.....	367	6,032	162	5,870	(D)	(D)	121	(D)	(D)	1,370	4,529	150	4,379
Other electrical equipment.....	361-64,369	(D)	(D)	2,664	(D)	(D)	118	(D)	(D)	521	(D)	(D)	2,025
Transportation equipment.....	37	28,087	10,392	17,695	244	109	136	2,044	784 (S)	1,259	25,799	9,499	16,300
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	11,950	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	279	31	0	31	(D)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	14,260	8,794	5,466	(D)	(D)	(D)	(D)	(D)	(D)	12,787	7,978	4,809

See explanatory information and SOURCE at end of table.

Table A-25. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1994

Page 2 of 2

Distribution by industry	SIC code	Total			Basic			Applied			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
Professional and scientific instruments.....	38	\$11,441	\$3,384	\$8,058	(D)	(D)	\$467	\$2,086	\$299	\$1,787	(D)	(D)	\$5,803
Scientific and mechanical measuring instruments.....	381-82	6,952	3,266	3,687	(D)	(D)	197	1,409	271	1,138	(D)	(D)	2,351
Optical, surgical, photographic, and other instruments.....	384-87	4,489	118	4,371	(D)	(D)	270	677	28	649	(D)	(D)	3,452
Other manufacturing industries.....	27,31,39	(D)	(D)	796	(D)	(D)	93	129	0	129	(D)	(D)	574
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	28,846	5,090	23,756	2,036	689	1,346	6,169	2,035	4,134	20,641	2,366 (S)	18,275

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KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

N/A = Not available

NOTE: The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-26. Number of R&D-performing companies conducting basic research, and total number of R&D-performing companies, by industry and size of company: 1994

Page 1 of 2

Industry	SIC Code	Size of company											
		Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Basic research	Total	Basic research	Total	Basic research	Total	Basic research	Total	Basic research	Total	Basic research
Total.....		38,074	6,447	995	142	1,238	251	253	48	191	55	127	43
Food, kindred, and tobacco products.....	20,21	622	103	122	15	76	18	20	6	13	3	11	4
Textiles and apparel.....	22,23	194	60	34	5	57	20	7	0	9	3	1	0
Lumber, wood products, and furniture.....	24,25	652	311	31	8	38	8	9	1	1	0	2	0
Paper and allied products.....	26	617	74	10	2	36	6	10	1	9	4	5	1
Chemicals and allied products.....	28	1,599	496	61	12	84	28	22	10	22	12	10	6
Industrial chemicals.....	281-82,286	372	127	40	7	27	10	6	2	8	4	5	4
Drugs and medicines.....	283	346	6	8	3	27	8	6	4	9	7	4	2
Other chemicals.....	284-85,287-89	882	363	13	2	30	10	10	4	5	1	1	0
Petroleum refining and extraction.....	13,29	148	15	7	1	17	3	3	0	7	3	6	4
Rubber products.....	30	1,145	129	41	5	59	9	7	0	3	0	2	1
Stone, clay, and glass products.....	32	316	50	19	3	20	6	5	2	5	3	1	1
Primary metals.....	33	394	134	43	9	46	6	17	3	5	1	3	2
Ferrous metals and products.....	331-32,3398-99	185	53	15	7	31	5	13	3	2	0	1	1
Nonferrous metals and products.....	333-36	208	81	27	2	15	1	4	0	3	1	2	1
Fabricated metal products.....	34	1,719	546	57	7	92	13	4	0	10	1	1	1
Machinery.....	35	4,895	1,495	133	14	122	17	20	2	13	1	3	1
Office, computing, and accounting machines.....	357	461	100	20	0	25	5	5	0	2	0	1	1
Other machinery, except electrical.....	351-56,358-59	4,434	1,395	113	14	97	12	15	2	11	1	2	0
Electrical equipment.....	36	2,787	198	91	10	111	17	13	3	13	2	10	5
Radio and TV receiving equipment.....	365	100	11	4	0	5	3	0	0	0	0	0	0
Communication equipment.....	366	567	125	18	2	25	3	1	0	2	0	3	1
Electronic components.....	367	1,146	9	30	3	37	7	7	2	2	0	2	1
Other electrical equipment.....	361-64,369	975	53	39	5	44	4	5	1	9	2	5	3

See explanatory information and SOURCE at end of table.

Table A-26. Number of R&D-performing companies conducting basic research, and total number of R&D-performing companies, by industry and size of company: 1994

Page 2 of 2

Industry	SIC Code	Size of company											
		Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Basic research	Total	Basic research	Total	Basic research	Total	Basic research	Total	Basic research	Total	Basic research
Transportation equipment.....	37	782	226	66	4	61	8	17	5	11	4	14	4
Motor vehicles and motor vehicles equipment.....	371	284	24	54	2	36	5	10	3	6	2	4	1
Other transportation equipment.....	373-75,379	345	184	8	1	10	1	2	1	2	1	2	0
Aircraft and missiles.....	372,376	154	18	4	1	15	2	5	1	3	1	8	3
Professional and scientific instruments....	38	2,204	239	69	8	63	11	10	4	3	2	8	2
Scientific and mechanical measuring instruments.....	381-82	1,195	16	44	6	21	4	5	1	2	1	5	1
Optical, surgical, photographic, and other instruments.....	383-87	1,009	223	25	2	42	7	5	3	1	1	3	1
Other manufacturing industries.....	27,31,39	795	158	34	3	52	18	16	1	9	3	2	1
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	19,207	2,215	178	35	304	63	73	10	58	13	48	10

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-27. Number of full-time-equivalent (FTE) R&D scientists and engineers in R&D-performing companies, by industry and size of company: 1984-95

Industry and size of company	SIC code	[In thousands]											Page 1 of 2
		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	
Total (January).....		584.1	622.5	671.0	695.8	708.6	722.5	743.6	773.4	779.3	764.7	768.5	749.2
Total (Annual average).....		603.3	646.8	683.4	702.2	715.6	733.0	758.5	776.4	772.0	766.6	758.8	N/A
Distribution by industry:													
Food, kindred, and tobacco products	20,21	7.4	(S)	(S)	(S)	(S)	(S)	(S)	9.4	9.8	9.6	10.3	9.0
Textiles and apparel.....	22,23	2.3	2.8	2.6	2.4	2.4	2.5	2.8	(S)	2.8	3.1	3.3	3.1
Lumber, wood products, and furniture....	24,25	(T)	(S)	(S)	1.3	1.3	1.4	(S)	(S)	1.5	1.6	3.3	2.3
Paper and allied products.....	26	6.6	6.6	6.4	6.0	6.1	6.4	8.5	(S)	10.7	10.6	10.6	10.6
Chemicals and allied products.....	28	69.8	71.1	75.8	75.2	75.8	78.3	80.4	81.6	85.6	86.5	93.1	91.5
Industrial chemicals.....	281-82,286	25.6	23.5	24.9	(S)	(S)	(S)	(S)	(S)	29.9	26.4	28.8	27.0
Drugs and medicines.....	283	(T)	30.8	31.8	32.6	33.0	34.4	34.3	35.4	38.7	42.3	48.5	50.3
Other chemicals.....	284-85,287-89	13.4	16.7	19.1	20.2	20.3	18.8	18.9	17.0	17.0	17.8	15.8	14.2
Petroleum refining and extraction.....	13,29	13.3	13.5	10.4	9.9	9.5	10.7	11.1	11.4	11.5	11.0	9.7	9.0
Rubber products.....	30	(T)	(S)	14.8	13.0	9.0	8.8						
Stone, clay, and glass products.....	32	5.6	6.6	7.5	8.6	8.6	7.6	7.0	6.0	5.3	5.1	4.0	4.3
Primary metals.....	33	8.4	7.1	5.7	5.5	5.6	5.5	5.2	4.6	5.1	4.6	5.1	6.7
Ferrous metals and products.....	331-32,3398-99	5.3	4.2	2.5	(S)	2.3	2.3	(S)	(S)	1.7	1.6	2.6	1.9
Nonferrous metals and products.....	333-36	3.1	2.9	3.2	3.4	3.3	3.3	3.3	3.0	(S)	(S)	2.5	4.8
Fabricated metal products.....	34	16.6	(S)	(S)	9.9	10.5	9.9	10.1	(S)	8.7	7.9	10.2	9.5
Machinery.....	35	87.0	81.7	89.7	95.8	98.4	100.4	113.3	109.7	99.3	97.4	70.4	66.3
Office, computing, and accounting machines.....	357	56.5	61.8	71.9	73.4	74.4	75.0	84.7	77.6	67.1	65.8	34.6	30.3
Other machinery, except electrical....	351-56,358-59	30.5	19.9	17.8	22.4	24.0	25.4	28.6	32.1	32.2	31.6	35.8	35.9
Electrical equipment.....	36	113.2	113.2	117.9	130.4	132.5	122.5	105.2	95.9	91.9	89.2	96.5	105.5
Radio and TV receiving equipment.....	365	(T)	(S)	1.8	1.2	1.3	1.5	0.8	1.0	1.0	1.0	0.8	0.9
Communication equipment.....	366	59.3	62.2	65.0	71.9	73.1	58.0	47.1	35.8	31.2	(S)	36.0	(S)
Electronic components.....	367	(T)	29.2	(S)	43.7	44.3	42.8	(S)	32.6	28.4	28.9	40.1	41.0
Other electrical equipment.....	361-64,369	18.4	17.9	16.5	13.6	(S)	(S)	21.3	(S)	31.2	28.8	19.6	20.3
Transportation equipment.....	37	(T)	160.3	179.2	187.3	188.2	185.4	170.2	149.7	141.1	147.5	129.6	115.8
Motor vehicles and motor vehicles equipment.....	371	28.6	28.7	33.9	46.5	47.3	45.8	49.4	45.3	44.5	45.1	51.0	51.3
Other transportation equipment.....	373-75,379	(T)	(S)	5.8	(S)	6.0							
Aircraft and missiles.....	372,376	111.5	130.2	144.8	136.3	136.4	134.8	115.3	100.2	92.9	97.9	72.8	58.5

See explanatory information and SOURCE at end of table.

Table A-27. Number of full-time-equivalent (FTE) R&D scientists and engineers in R&D-performing companies, by industry and size of company: 1984-95

Page 2 of 2

Industry and size of company	SIC code	[In thousands]										
		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Distribution by industry:												
Professional and scientific instruments..	38	(T)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	100.6 (S)
Scientific and mechanical measuring instruments.....	381-82	(T)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	69.2 (S)
Optical, surgical, photographic, and other instruments.....	384-87	(T)	19.8	24.0	24.6	24.9	14.5	8.1	(S)	(S)	20.8	34.2
Other manufacturing industries.....	27,31,39	(T)	(S)	(S)	6.3	6.4	5.4	5.6	(S)	6.0	5.8	15.5
Nonmanufacturing industries 1/.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	49.8	66.8	75.1	96.4	101.9	125.2	(S)	(S)	202.6	196.5	197.4
Distribution by size of company: [Number of employees]												
Total.....		584.1	622.5	671.0	696	708.6	722.5	743.6	773.4	779.3	764.7	768.5
Fewer than 500		81.9	78.3	(S)	105	109.0	105.4	(S)	(S)	142.1	125.1	148.6
500 to 999		N/A	16.5	(S)	18	19.3	18.0	18.6	18.6	46.2	46.1	27.9
1,000 to 4,999.....		52.6	61.6	66.7	76	81.9	76.1	75.4	79.3	94.2	99.3	108.9
5,000 to 9,999.....		30.1	28.5	38.9	41	40.2	47.3	57.2	55.1	57.6	56.4	60.3
10,000 to 24,999.....		84.0	89.9	88.4	92	94.5	87.0	73.9	90.3	99.9	102.6	90.6
25,000 or more.....		335.5	347.6	365.3	363	363.7	388.7	404.2	408.4	339.2	335.2	332.1
												316.8

1/ Nonmanufacturing industries for 1990 and prior years included the following SICs only: 10-11, 14-17, 40-42, 44-51, 53-54, 56, 60, 62-63, 72-73, 78, 806-07, and 87.

KEY: (S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

(T) = Data not separately available, but are included in total.

N/A = Not available

NOTE: As a result of a new sample design, statistics for 1988-91 have been revised since originally published.

These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-28. Cost per R&D scientist or engineer in R&D-performing companies, by industry and size of company: 1984–94

Page 1 of 2

Industry and size of company	SIC code	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Total.....		\$124,000	\$130,200	\$128,500	\$128,800	\$132,300	\$134,500	\$141,300	\$148,600	\$157,912	\$153,336	\$157,601
Distribution by industry:												
Food, kindred, and tobacco products...	20,21	(D)	(D)	(D)	(S)	(D)	(D)	(D)	130,000	144,215	135,261	153,609
Textiles and apparel.....	22,23	(D)										
Lumber, wood products, and furniture..	24,25	115,400	116,300	(S)	(S)	(D)	(S)	(S)	(D)	(D)	(D)	(D)
Paper and allied products.....	26	(D)	(D)	(D)	(D)	(D)	(S)	(S)	(D)	(D)	(D)	(D)
Chemicals and allied products.....	28	112,500	116,300	117,100	125,000	139,400	149,000	159,000	167,600	183,508	(D)	(D)
Industrial chemicals.....	281–82,286	132,000	144,600	150,200	(S)	(S)	(S)	(S)	181,000	193,871	(D)	(D)
Drugs and medicines.....	283	(D)	(D)	113,600	(D)	142,800	(D)	(D)	(D)	196,631	202,607	195,145
Other chemicals.....	284–85,287–89	(D)	(D)	83,100	(D)	105,600	(D)	(D)	(D)	135,423	(D)	(D)
Petroleum refining and extraction.....	13,29	(D)	(D)	(D)	187,400	182,700	194,000	201,800	217,000	205,318	208,360	209,439
Rubber products.....	30	(D)										
Stone, clay, and glass products.....	32	(D)	(D)	118,000	122,500	(D)	(D)	(D)	(D)	(D)	137,990	141,842
Primary metals.....	33	(D)	(D)	(D)	131,500	118,600	(S)	(D)	142,200	114,057	138,552	116,556
Ferrous metals and products.....	331–32,3398–99	(D)	(D)	(D)	(D)	(S)	(D)	(D)	(D)	(D)	138,851	(D)
Nonferrous metals and products.....	333–36	112,000	136,400	138,800	(D)	(S)	(D)	(D)	(D)	(D)	138,326	(S)
Fabricated metal products.....	34	111,600	112,900	(S)	76,600	88,100	(S)	(S)	115,500	123,828	129,131	113,168
Machinery.....	35	124,500	142,500	(D)	(D)	(D)	130,000	138,500	147,800	152,797	100,631	118,717
Office, computing, and accounting machines.....	357	(D)	99,564	126,476								
Other machinery, except electrical...	351–56,358–59	(D)	(D)	119,200	98,300	99,400	(D)	(D)	(D)	(D)	102,213	111,691
Electrical equipment.....	36	121,700	124,900	120,700	124,300	124,100	132,400	142,800	147,100	150,118	144,725	151,872
Radio and TV receiving equipment..	365	(D)	(D)	88,700	97,900	124,200	103,400	113,200	(D)	(D)	(D)	(D)
Communication equipment.....	366	143,000	147,800	141,300	155,300	160,300	170,600	177,100	(S)	(D)	(D)	(D)
Electronic components.....	367	100,500	114,100	(D)	98,400	(S)	(S)	128,400	(D)	127,801	154,366	148,761
Other electrical equipment.....	361–64,369	(D)	(D)	(D)	(S)	68,500	(S)	(S)	(D)	(D)	(D)	(D)
Transportation equipment.....	37	(D)	(D)	170,700	183,400	195,600	211,700	215,700	189,400	191,274	196,777	228,881
Motor vehicles and motor vehicles equipment.....	371	211,400	223,100	(D)								
Other transportation equipment....	373–75,379	(D)	(D)	(S)	(S)	(D)						
Aircraft and missiles.....	372,376	156,000	161,700	149,800	180,400	193,300	207,300	213,700	177,000	180,552	176,450	217,219

See explanatory information and SOURCE at end of table.

Table A-28. Cost per R&D scientist or engineer in R&D-performing companies, by industry and size of company: 1984–94

Page 2 of 2

Industry and size of company	SIC code	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Professional and scientific instruments	38	\$116,900	\$122,000	(S)	(S)	(S)	(S)	(S)	(S)	\$115,180	(S)	\$119,693
Scientific and mechanical measuring instruments.....	381–82	(D)	(D)	(D)	(D)	(S)	(S)	(S)	(S)	94,036	(S)	102,570
Optical, surgical, photographic, and other instruments.....	384–87	(D)	(D)	(D)	(D)	316,700	(S)	(S)	(S)	161,721		161,435
Other manufacturing industries.....	27,31,39	(D)	(D)	(S)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Nonmanufacturing industries 1/.....	07–10, 12–17, 40–42, 44–49, 50–59, 60–65, 67, 701, 73, 75–76, 78–79, 80–81, 83–84, 87, 89	84,100	94,600	86,800	69,100	74,900	(S)	137,400	152,411	159,188		142,125
Distribution by size of company: [Number of employees]												
Total.....		124,000	130,200	128,500	128,800	132,300	134,500	141,300	148,600	157,912	153,336	157,601
Fewer than 500.....		55,000	(S)	70,600	66,800	67,100	66,200	(S)	103,400	111,358	106,888	85,793
500 to 999.....		87,200	(S)	103,400	92,600	(S)	98,200	(S)	178,700	176,585	87,233	138,366
1,000 to 4,999.....		96,700	97,300	106,400	91,900	100,600	101,900	91,400	119,400	127,135	128,565	139,693
5,000 to 9,999.....		111,000	119,300	108,400	102,900	100,400	102,500	110,800	150,800	148,285	156,899	152,227
10,000 to 24,999.....		130,500	124,600	122,300	132,700	143,000	127,300	135,300	167,300	156,190	160,229	182,243
25,000 or more.....		143,000	155,300	154,300	157,700	160,700	168,200	193,700	180,100	182,839	184,804	195,890

1/ Nonmanufacturing industries for 1990 and prior years included the following SICs
only: 10–11, 14–17, 40–42, 44–51, 53–54, 56, 60, 62–63, 72–73, 78, 806–07, and 87.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NOTES: The number of full-time-equivalent R&D scientists and engineers used to estimate the cost per R&D scientist or engineer is the arithmetic mean of the numbers of R&D scientists and engineers reported for January in two consecutive years. This number is then divided into the total R&D expenditures of the earlier years, and the ratio is attributed to the earlier year.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published.

These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-29. Cost per R&D scientist or engineer in R&D-performing companies, by industry and size of company: 1994

Page 1 of 2

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
Total.....		\$157,601	\$85,793	\$138,366	\$139,693	\$152,227	\$182,243	\$195,890
Food, kindred, and tobacco products.....	20,21	153,609	56,201	173,792	140,234	146,931 (S)	146,494	209,273
Textiles and apparel.....	22,23	(D)	70,026	155,469	108,859	298,833	122,060 (S)	(D)
Lumber, wood products, and furniture.....	24,25	(D)	33,659	96,377	90,873	121,163	(D)	(D)
Paper and allied products.....	26	(D)	61,053 (S)	108,649	168,244	235,370 (S)	116,529 (S)	(D)
Chemicals and allied products.....	28	(D)	75,623	126,660	177,233	164,839	208,158	240,018
Industrial chemicals.....	281-82,286	(D)	50,150	134,397	152,773	131,682	263,244 (S)	295,013
Drugs and medicines.....	283	195,145	84,107	155,449	225,970	196,118	206,729	202,790 (S)
Other chemicals.....	284-85,287-89	(D)	46,844	103,222	119,223	154,085 (S)	201,107	(D)
Petroleum refining and extraction.....	13,29	209,439	66,033	(D)	188,659 (S)	(D)	216,429 (S)	223,159
Rubber products.....	30	(D)	176,887	217,631	158,128 (S)	122,665 (S)	(D)	(D)
Stone, clay, and glass products.....	32	141,842	112,796	98,596 (S)	131,341	144,792 (S)	142,306	(D)
Primary metals.....	33	116,556	59,259	77,854	123,194 (S)	194,481	157,787	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	36,588	86,415 (S)	102,022	146,732	(D)	(D)
Nonferrous metals and products.....	333-36	(D)	67,739	76,967	153,447 (S)	(D)	(D)	(D)
Fabricated metal products.....	34	113,168	63,653	119,913	128,715	(D)	143,729 (S)	(D)
Machinery.....	35	118,717	70,018	123,944	130,944	133,028	229,136	(D)
Office, computing, and accounting machines.....	357	126,476	69,037	120,922	149,896	133,512	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	111,691	69,515	125,951	112,492	131,936	210,755	(D)
Electrical equipment.....	36	151,872	87,997	147,576	126,118	233,652	171,974 (S)	172,118 (S)
Radio and TV receiving equipment.....	365	(D)	53,895	(D)	93,693 (S)	0	0	0
Communication equipment.....	366	(D)	99,034	117,181	111,222	(D)	(D)	(D)
Electronic components.....	367	148,761	79,235	160,552	190,522	237,894	(D)	(D)
Other electrical equipment.....	361-64,369	(D)	63,334	171,356	118,387	143,234	147,780	(D)
Transportation equipment.....	37	228,881	(D)	157,427	161,249	106,104 (S)	187,198 (S)	257,701
Motor vehicles and motor vehicles equipment.....	371	(D)	23,066	156,355	137,098	131,406	123,565 (S)	(D)
Other transportation equipment.....	373-75,379	(D)	75,701	227,210	136,013 (S)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	217,219	5,274	(D)	185,395	122,871 (S)	(D)	252,264

See explanatory information and SOURCE at end of table.

Table A-29. Cost per R&D scientist or engineer in R&D-performing companies, by industry and size of company: 1994

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
Professional and scientific instruments.....	38	\$119,693 (S)	\$69,740	\$127,739	\$132,424	\$194,181	\$145,439	\$127,251 (S)
Scientific and mechanical measuring instruments.....	381-82	102,570 (S)	91,367	126,625	113,882	140,717	(D)	98,854 (S)
Optical, surgical, photographic, and other instruments.....	384-87	161,435	55,910	134,452	153,872	247,736	(D)	320,238 (S)
Other manufacturing industries.....	27,31,39	(D)	34,744	111,151	102,035	88,297 (S)	152,633 (S)	(D)
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	142,125	116,669	141,062	127,651	143,855	130,688	178,137

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KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NOTES: The number of full-time-equivalent R&D scientists and engineers used to estimate the cost per R&D scientist or engineer is the arithmetic mean of the numbers of R&D scientists and engineers reported for January in two consecutive years. This number is then divided into the total R&D expenditures of the earlier years, and the ratio is attributed to the earlier year.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published.

These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994

Table A-30. Domestic employment of R&D-performing companies, by industry and size of company: 1993-94

Page 1 of 3

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
1993								
Total.....		16,585	1,783	621	2,639	1,630	2,845	7,068
Food, kindred, and tobacco products.....	20,21	1,081	70	39	176	142	170	485
Textiles and apparel.....	22,23	463	48	(D)	127	52	135	(D)
Lumber, wood products, and furniture.....	24,25	300	53	27	77	55	(D)	(D)
Paper and allied products.....	26	562	28	23	73	53	153	232
Chemicals and allied products.....	28	1,196	110	39	182	135	342	387
Industrial chemicals.....	281-82,286	512	15	11	64	59	128	234
Drugs and medicines.....	283	351	27	8	62	25	(D)	(D)
Other chemicals.....	284-85,287-89	333	68	20	56	51	(D)	(D)
Petroleum refining and extraction.....	13,29	385	8	4	32	21	116	204
Rubber products.....	30	378	100	40	103	(D)	(D)	(D)
Stone, clay, and glass products.....	32	245	34	(D)	46	38	80	(D)
Primary metals.....	33	452	38	(D)	118	95	109	(D)
Ferrous metals and products.....	331-32,3398-99	283	19	(D)	87	75	48	(D)
Nonferrous metals and products.....	333-36	169	20	(D)	30	20	61	(D)
Fabricated metal products.....	34	604	116	46	163	(D)	205	(D)
Machinery.....	35	1,145	240	87	276	171	157	213
Office, computing, and accounting machines....	357	281	33	14	61	72	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	864	207	73	216	99	(D)	(D)
Electrical equipment.....	36	1,267	153	64	241	56	161	592
Radio and TV receiving equipment.....	365	16	(D)	(D)	10	0	0	0
Communication equipment.....	366	276	(D)	10	47	0	(D)	(D)
Electronic components.....	367	333	56	24	86	(D)	(D)	(D)
Other electrical equipment.....	361-64,369	643	58	(D)	98	(D)	101	343
Transportation equipment.....	37	1,830	46	31	126	124	167	1,336
Motor vehicles and motor vehicles equipment....	371	948	24	7	85	66	(D)	(D)
Other transportation equipment.....	373-75,379	102	14	6	10	21	(D)	(D)
Aircraft and missiles.....	372,376	781	8	18	31	37	85	601

See explanatory information and SOURCE at end of table.

Table A-30. Domestic employment of R&D-performing companies, by industry and size of company: 1993-94

Page 2 of 3

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
1993								
Professional and scientific instruments.....	38	738	107	51	146	42	75	316
Scientific and mechanical measuring instruments.....	381-82	382	51	29	62	(D)	(D)	168
Optical, surgical, photographic, and other instruments.....	384-87	356	56	22	85	(D)	(D)	149
Other manufacturing industries.....	27,31,39	493	113	(D)	92	79	120	(D)
Nonmanufacturing industries	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	5,448	517	91	662	482	829	2,868
1994								
Total.....		17,443	2,316	706	2,756	1,748	2,989	6,929
Food, kindred, and tobacco products.....	20,21	1,103	46	85	180	140	180	472
Textiles and apparel.....	22,23	446	31	(D)	137	47	155	(D)
Lumber, wood products, and furniture.....	24,25	337	42	22	82	61	(D)	(D)
Paper and allied products.....	26	696	170	8	79	72	165	203
Chemicals and allied products.....	28	1,225	105	46	183	143	341	407
Industrial chemicals.....	281-82,286	548	40	30	58	41	125	254
Drugs and medicines.....	283	382	28	(D)	61	38	136	(D)
Other chemicals.....	284-85,287-89	295	37	(D)	64	64	80	(D)
Petroleum refining and extraction.....	13,29	376	8	5	40	21	112	190
Rubber products.....	30	456	154	(D)	113	43	38	(D)
Stone, clay, and glass products.....	32	221	17	13	43	34	(D)	(D)
Primary metals.....	33	482	44	34	109	117	81	98
Ferrous metals and products.....	331-32,3398-99	279	24	12	76	88	(D)	(D)
Nonferrous metals and products.....	333-36	204	20	22	33	29	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-30. Domestic employment of R&D-performing companies, by industry and size of company: 1993-94

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
1994								
Fabricated metal products.....	34	612	186	39	183	(D)	146	(D)
Machinery.....	35	1,143	315	99	275	146	197	111
Office, computing, and accounting machines....	357	201	30	15	62	39	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	942	285	84	213	108	(D)	(D)
Electrical equipment.....	36	1,433	241	63	237	82	222	587
Radio and TV receiving equipment.....	365	21	7	3	12	0	0	0
Communication equipment.....	366	312	45	12	53	(D)	(D)	(D)
Electronic components.....	367	383	107	22	79	(D)	(D)	(D)
Other electrical equipment.....	361-64,369	717	82	27	93	28	148	340
Transportation equipment.....	37	1,812	51	42	144	121	161	1,293
Motor vehicles and motor vehicles equipment..	371	1,032	18	34	85	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	148	20	6	20	(D)	(D)	(D)
Aircraft and missiles.....	372,376	632	12	3	39	35	52	492
Professional and scientific instruments.....	38	791	159	49	144	67	40	333
Scientific and mechanical measuring instruments.....	381-82	414	64	(D)	49	32	(D)	210
Optical, surgical, photographic, and other instruments.....	384-87	377	96	(D)	95	35	(D)	123
Other manufacturing industries.....	27,31,39	544	90	(D)	108	105	156	(D)
Nonmanufacturing industries.....	07-10, 12-17, 40-42, 44-49, 50-59, 60-65, 67, 701, 73, 75-76, 78-79, 80-81, 83-84, 87, 89	5,765	657	124	699	517	908	2,858

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

NOTES: Rankings were based on total (company, Federal, and other) R&D funds.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published.

These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. See the technical notes for more information.

SOURCE: National Science Foundation/SRS, Survey of Industrial Research and Development: 1994